

**An investigation of the relationship between self-esteem and risk-taking
behaviour among adolescent students studying at the University of
KwaZulu-Natal, Pietermaritzburg campus.**

By

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Abstract

This study sought to investigate the relationship between self-esteem and risk-taking behaviour among adolescent students studying at the University of KwaZulu-Natal, Pietermaritzburg Campus. A total of 188 adolescent students within the age range of 18 and 22 from different race, academic level and genders were sampled from the student population.

The study was conducted using a quantitative method, using correlational statistics. Self-esteem and risk-taking behaviour were the main variables studied.

Research shows that adolescents' engagement in risk-taking behaviour is prevalent and on the rise both locally and internationally. Negotiating adolescence involves many challenges and adjustment problems. Those who experience difficulties may resort to risk-taking behaviour. Only a few studies have linked low self-esteem to risk-taking behaviour. A self-administered questionnaire was used to collect data and it comprised of items from two separate questionnaires: (1) the Rosenberg Self-esteem Scale (RSS); and (2) a Risk-Taking Behaviour Assessment Scale.

Data were computed and analyzed using the Statistical Package for Social Sciences (SPSS). This study found that self-esteem and risk-taking behaviour did not correlate significantly. Thus the null-hypothesis was proved to be true, indicating that self-esteem did not correlate with risk-taking behaviour, possibly because adolescent risk-taking behaviour is a complex phenomenon with multiple determinants or etiological factors. Detailed findings also revealed different patterns and levels of risk-engagement, and how they related to demographics. For example, alcohol use was found to be the most common form of risk behaviour amongst the participants. Risk-taking behaviour was higher amongst males than females.

The findings of the present study provide information and possible understanding of the nature of the relationship between self-esteem and risk-taking behaviour among adolescent students. This has possible implications for further research, prevention and treatment strategies for counselling centre staff at local universities.

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Chapter 1: Introduction

1.1. Introduction

Adolescence is a stage of development between childhood and adulthood, characterized by physical, social and psychological challenges (Lloyd, 1985; Louw & Louw, 2007). Adolescents negotiating this stage have to deal with a lot of challenges ranging from adjustment to new body changes or puberty, confrontation of sexual arousal and sexual orientation, dealing with self-identity, forming of new relationships, adjusting to new roles in society, and making a lot of decisions (Brooks-Gunn & Reiter, 1990).

Although adolescence is a time of massive vulnerability and stress, it can also be a time for change characterized with positive growth (Kimmel & Weiner, 1995; Leather, 2009). For instance, when adolescent stage is successfully negotiated, it can lead to a responsible functioning adult. However, if not negotiated successfully, it is likely to result in a number of problems that negatively affect the individual, such as engagement into risk-taking behaviour (Lloyd, 1985). Suicidal behaviour, substance abuse, self-injurious behaviour, violent behaviour, delinquency and sexual-risk are few examples among risk-taking behaviours (Flisher, Ziervogel, Chalton, & Robertson, 1993a; Michael & Ben-Zur, 2007).

Research shows that adolescent's engagement in risk-taking behaviour is prevalent and on the rise both internationally (Essau, 2004; Leather, 2009; Michael & Ben-Zur, 2007) and locally (Kalichman, Simbayi, Jooste, Cain, & Cherry, 2006; Flisher et al., 1993a; Peltzer, Malaka, & Phaswana, 2001). The most common risk-taking behaviours that adolescents engage in include drug and alcohol use, cigarette smoking, sexual-risk behaviour, and violence (Timmermans, Van Lier & Koot, 2008; Umeh, 2009). Furthermore, a number of studies documented that more male than female adolescents engage in risk-taking behaviour (Kalichman et al., 2006; Kavas, 2009; Peltzer, Malaka, & Ramalagan, 2001). A study by Wild, Flisher, Bhana, and Lombard (2004) reported that cigarette smoking, alcohol consumption, using drugs and sexual-risk behaviour were more prevalent among grade 11 boys than grade 11 girls. Furthermore, adolescents from low socioeconomic status have been found to be delinquent in most cases, than their counterparts (Gouws, Kruger, & Burger, 2010).

Adolescents at university are more prone to risk-taking behaviour because of many challenges that come with being a student at university (Peltzer, Malaka, & Ramalagan, 2001). These challenges range from being far away from home, lack of parental guidance and supervision, adapting to new environment and academic demands, adapting to new social pressures, to mention but a few (Morojele, Rich, Flisher, and Myers, 2012). Lloyd (1985) argues that some adolescents end up engaging in risk-taking behaviours in an attempt to cope with all these challenges,

According to Wild et al. (2004, p. 1454) “one possible antecedent of risk behaviours in adolescence is low self-esteem”. To support this, Coleman and Hendry (1991) include low self-esteem amongst numerous factors responsible for adolescents’ engagement in risk-taking behaviour. Findings from a study by Wild et al. (2004) also showed that individuals with low self-esteem were predisposed to risk-taking behaviour and were more likely to resort to risky behaviours in order to cope with negative feelings linked to low self-esteem. Few other studies have also linked low self-esteem with engagement to risk-taking behaviour (Kavas, 2009; Peltzer, Malaka, & Ramalagan, 2001; Wild et al., 2004), on the one hand. On the other hand, others associated high self-esteem with an overall sense of well-being and less engagement in risk-taking behaviours (Kavas, 2009; Wild et al., 2004).

Most studies on adolescent risk-taking behaviours and self-esteem have been conducted abroad in countries like America, Turkey, and the Netherlands (Baumeister, Campbell, Krueger, & Vohs, 2003; Kavas, 2009; Trzesniewski et al., 2006), while locally (Flisher et al., 1993; Peltzer, Malaka, & Ramalagan, 2001; Wild et al., 2004) have conducted similar studies, with most of them being sampled from high school learners in Cape Town and focusing only on risk-taking behaviour other than its relations to self-esteem. Most of these studies predominantly focused on school going learners or adolescents, leaving much to be desired for adolescents at university level. However, a study which focused on university students was done at the University of Limpopo (during the time of research the university was known as the University of the North, Turfloop campus) by Peltzer, Malaka, and Ramalagan (2001). No studies of this nature have been conducted in KwaZuluNatal or at the University of KwaZulu-Natal.

As evidenced from above, there is a gap of knowledge for the literature and information pertaining to studies on risk-taking behaviour and self-esteem among university adolescents in the province of KwaZulu-Natal. In addition, Wild et al. (2004) have also noted a gap of knowledge regarding empirical evidence for relations between self-esteem and adolescent risk-taking behaviour. Therefore, more research in this area is still necessary and an attempt to close such a gap is undertaken by this current study. This study will investigate the relationship between self-esteem and risk-taking behaviour among adolescent students attending at the University of KwaZulu-Natal, Pietermaritzburg Campus.

This study employs a quantitative research method, which provides a systematic and objective use of numerical data from selected subgroup of a population in order to generalise the findings to the population that is being studied (K. Maree, 2010). This study comprises of a twofold questionnaire: one is a measure of risk-taking behaviour and the other, is a measure of self-esteem. Convenience sampling is used to select the sample (Du Ploy, 2002), and data was collected by completing a self-administered questionnaire, which was then computed and analysed using the Statistical Packages for Social Sciences (IBM SPSS Statistics 21).

1.2. Research outline

This study is structured and presented in various chapters. The first chapter, the current chapter, introduces the study. A literature review in *chapter 2* gives a summary outline of a comprehensive survey of prior research which provides an overview of relevant literature and research in an attempt to contextualise the aims, hypotheses and results of this study. Moreover, it elaborates more on recent information or data and research about self-esteem, late adolescent stage and risk-taking behaviour. A theoretical background of risk-taking behaviour and self-esteem is also covered under this chapter.

Chapter 3 describes the methodology used in this study, and it also provides a specific and detailed account of how research questions are answered. In addition, this chapter covers topics such as: the research design, sampling, data collection, instruments of measurements (including reliability and validity), and the actual research methodology that was followed.

Chapter 4 reports on data analysis results by providing a summary description of the findings. Graphs representation of the results is included under this chapter. And lastly, *Chapter 5* concludes the research with a discussion of these results as presented within the context of the original aims and hypotheses of this study, which includes implications of the presented findings, limitations of the study, conclusions, and suggestions for future research, in cognisant of current literature.

Chapter 2: Literature Review

This chapter gives an outline of a comprehensive survey of prior research, that provides an overview of the relevant literature and research in an attempt to contextualise the aims, hypotheses and results of this study. Moreover, it elaborates on recent information or data and research about self-esteem, late adolescence stage and risk-taking behaviour. In addition, a theoretical background of risk-taking behaviour and self-esteem is also covered under this chapter.

2.1. Adolescent stage

2.1.1. Definition

Nielsen (1996) explains that the word adolescence has been derived from the Latin verb '*adolescere*' which implies "to grow to maturity". It is defined as a transitional stage between childhood and adulthood (Lloyd, 1985; Louw & Louw, 2007). In addition, Dreyfus (1976) defines it as a period of human growth which integrates physical, social, intellectual, psychological and emotional aspects, puberty and self-identity are examples. This stage is subdivided into sub-stages which overlap for a number of years (Gouws et al., 2010; Feldman & Elliott, 1990; Lloyd, 1985): early adolescence, middle adolescence and late adolescence. The age distribution for these sub-stages is as follows: *early*- 11 to 13 years, *middle*- 14 to 17 years, and *late* adolescence 18 to 22 years.

For the purpose of this study adolescence will be defined as a developmental stage between childhood and adulthood, which is characterised by physical, social and psychological challenges, between the ages of 11 and 22 years (Dreyfus, 1976; Lloyd, 1985; Louw & Louw, 2007). The focus and attention of this study will be on late adolescence sub-stage.

2.1.2. Brief Historical background

It is imperative to have a historical overview of adolescence in order to understand how its study has developed over the years, how it is currently portrayed, and to surmise how it will be seen in the future. This will bring forth opportunities to deal effectively with current issues, whilst shaping and moulding a better future for this stage. This section gives a brief account of the historical background of adolescence and how it is portrayed today.

Major shifts in the viewing and experiences of adolescence have occurred over the years, leaving significant differences in challenges faced then and now. Today it is demanded of adolescents to cope with both their developmental challenges and that of society because of the incessant changes in their world and society (Gouws et al., 2010). For instance, before the 19th century many adolescents did not have formal schooling, they were married at a young age, also worked at a young age, and immediately assumed the adult role (Louw & Louw, 2007).

Growing up entails some elements of risk, but these risks are not constant (Feldman & Elliot, 1990). Most comparisons with previous eras indicate that adolescents today face a lot of challenges which entangle them in risk-taking behaviour more easily than in the past, therefore affecting how this stage is experienced and negotiated today. To show such evidence, the following are points for some of these changes, experiences, challenges and risks:

- Today more adolescents are being raised in a single-parent home or shared custody or by never-married mothers, in foster care or shelters due to high extramarital birth rate, high divorce rates, and AIDS, than adolescents in past decades (Gouws et al. 2010; Feldman & Elliot, 1990). It is likely for a given adolescent to experience such family forms within a short space of time, thus creating instability and poor sense of belongingness.
- Today more females have more roles to play and more opportunity to work than in the past where they only used to care for the family (Feldman & Elliot, 1990). More female adolescents now have many options to consider than before, and it can be frustrating to make a choice at times.

- Despite young people being prohibited from working for some time now, it still remains an important aspect for adolescents, since some do part-time jobs, contract work or inservice training, and others can secure a full time job (Feldman & Elliot, 1990). At least today adolescents are protected by labour relations acts and policies but the challenges are still stressful.
- Today's large scale of entertainment and leisure activities together with technological developments make more adolescents prone to risk-taking behaviour than in the past (Gouws et al., 2010; Feldman & Elliot, 1990).
- Today many things are easily accessible and at the disposal of adolescents in their environment than in the past (Gouws et al., 2010; Feldman & Elliot, 1990; Louw & Louw, 2007). For example, the availability of drugs has increased since 1994 in South Africa, leaving many adolescents at the mercy of drugs. It is reported that drug abuse is out of control in schools nationwide (Gouws et al., 2010).

Adolescence has not always been considered as a separate period of the life span (Ketterlinus & Lamb, 1994; Kimmel & Weiner, 1995; Louw & Louw, 2007). Instead there was a swift transition from childhood to adulthood because many young people assumed adult roles at a young age (Feldman & Elliot, 1990). In addition, the word “adolescence” was historically of less significant use among Western scholars, until it gained recognition in the 20th century (Ketterlinus & Lamb, 1994; Kimmel & Weiner, 1995). According to Galván (2012) various researchers across a wide continuum of scientific disciplines, have displayed significant interest in recent years pertaining to the study of adolescence, making the study of adolescent stage a recent phenomenon.

Today adolescence is a well-established developmental stage between childhood and adulthood, which came into being in the 20th century due to the emergence of children's rights, the introduction of formal schooling and globalization (Louw & Louw, 2007). It is now evident that adolescent stage changes and development over the years has placed today's adolescents in more vulnerable circumstances to engage in risk-taking behaviour, and they also affect how adolescence is negotiated. The next section will focus on the nature and characteristics of this stage.

2.1.3. Nature and Characteristics of the Adolescent Stage

The adolescent stage is characterized by several changes and natural characteristics. These changes (or traits) range from physical, psychological, neurological, social, and behavioural (Galván, 2012; Feldman & Elliott, 1990; Jones, 1980). Puberty is the most significant and common natural characteristic of adolescent stage the world over and it represents the physiological component of adolescent development. The onset of puberty marks the commencement of adolescence, when the body ventures into sexual maturation (Louw & Louw, 2007; Reber, Allen, & Reber, 2009). The word puberty is derived from the Latin verb *pubescere* which means to „to grow hairy or mossy, but it also signifies the stage when adolescents’ bodies become physically capable of reproducing (Nielsen, 1996). For instance, puberty usually dates back from the onset of menstruation in girls and the emergence of pubic hair in boys (Coleman & Hendry, 1991).

Significant hormonal secretion for both male and female adolescents takes place at puberty. Many researchers report that the secretion of somatotrophin (growth hormone) and gonadotrophin (sex hormone) takes place during this stage, and is responsible for the rapid physical growth and sexual maturation (Nielsen, 1996; Louw & Louw, 2007; Gouws et al., 2010). For example, the somatotrophin causes bodily growth, whilst the gonadotrophin stimulates the gonads (which refers to the testes in males & ovaries in females) to secrete or produce both male and female hormones. In addition, the gonads speed up their production of estrogen in girls and testosterone in boys (Nielsen, 1996). How much estrogen or testosterone is produced in an adolescent’s body is of great significance because it determines the rate of growth and sexual maturation.

The following table (Table 1) is a summary representation of major changes within the development of the primary and secondary sex characteristics that manifests at puberty. The information furnished in the table has been deduced from the work of Louw and Louw (2007), and Gouws et al. (2010).

Table 1. The development of primary and secondary sex characteristics

GIRLS	BOYS
Growth of underarm hair	Growth of underarm hair and beard
Production of underarm sweat -development of apocrine glands increases underarm sweat and adult body odour	Development of underarm and sweat glands - development of apocrine glands increases underarm sweating and adult body odour
Development of breasts -the areolae or area around the nipple swells, and the nipple begins to stand out	Enlargement of the larynx -the voice starts to deepen
Enlargement of the uterus	Enlargement of the penis -the penis starts to lengthen before it thickens
Commencement of menstruation	Commencement of ejaculation
Growth of pubic hair	Growth of pubic hair
Hormone secreted: estrogen	Hormone secreted: testosterone

The growth spurt is linked to some of the many changes that occur at puberty (Coleman & Hendry, 1991; Louw & Louw, 2007). The term “growth spurt” refers to the accelerated growth rate or increase in height and weight that occurs earlier within the adolescent stage, the legs, arms, hands and feet are examples. It usually begins two years earlier in girls than in boys, but boys grow more rapidly than girls (Louw & Louw, 2007). This means that by the end of the growing phase boys will be taller than girls, even though girls had an earlier onset of the growth spurt.

According to Coleman and Hendry (1991) puberty is not only characterised by changes in the reproductive system and secondary sexual characteristics of the individual, but it also encompasses changes in the functioning of the heart and thus the cardio-vascular system; in the lungs (which in turn affects the respiratory system); and the size and strength of the muscles of the body. Evidently, the adolescent stage is thus characterized by many developmental changes in the body which are crucial for health and effective behavioural functioning.

The adolescent stage is also characterized by loneliness; gaining independence from parents; running away from home; trouble with family, school, or police; delinquency; and substance abuse (Kimmel & Weiner, 1995). Thus, they experience this stage as a difficult and stressful one because they have to cope with significant personal changes and adapting to new roles within the social environment (Lloyd, 1985). According to Jones (1980) negotiating adolescents also have a need to understand their environment and how to be involved in making decisions which affect them. Other changes of note are discussed below in the following section.

2.1.4. Cognitive changes

Apart from puberty (or physiological changes), cognitive maturation is also one of the key characteristics of adolescence. In most cases the physiological changes often overshadow the consideration of equally significant cognitive changes during this stage (Gouws et al., 2010). However, the reality is that both physical and cognitive changes are significant, and accelerate markedly during this stage (Louw & Louw, 2007). This means that beyond starting to look like adults, adolescents also begin to think more like adults. That is, they acquire knowledge and self-knowledge in more formal ways; they become more rational, systematic, and logical in their thinking; are capable of formulating complex hypothetical arguments; and are able to follow a sequence of steps to task completion (Gouws et al., 2010; Kimmel & Weiner, 1995; Louw & Louw, 2007; Nielsen, 1996). Piaget's formal-operational phase is a classic example that depicts or explains such cognitive developments in adolescence.

A neurobiological study of risk in adolescence by Galván (2012) points out to two key cognitive and neural changes that occur during this stage that influence risky behaviour. The first is that maturation of the prefrontal cortex yields better cognitive control, and the second one is a heightened tendency towards reward-seeking behaviours, which go hand in hand with more neural activation in the dopamine-rich neural regions. Furthermore, the study contends that people are capable of controlled, analytic, rational processes; however, they usually depend more on automatic, intuitive, and heuristic processes. For instance, adolescents can engage in unsafe sexual intercourse despite their rational knowledge of risks attached to it due to the reward of perceived sexual satisfaction as opposed to safe sex and condom use.

Still on cognitive changes, Vygotsky's theory is of note despite its shift away from conventional cognitive development to focus more on the social and environment aspects thereof. His theory explains that all higher cognitive processes originate in social interaction (Gouws et al., 2010). He argues that relation between individuals and the world around them marks the development of intelligence, which is then taken into the individual as opposed to other theories, especially Piaget's theory. Vygotsky's theory emphasises the role of environment in children's and adolescent's intellectual development. Therefore, it is deduced from Vygotsky's theory that social interaction and the environment are key developmental characteristics in adolescence.

2.1.5. Adjustment challenges

Adolescence is marked by many developmental changes as noted in the previous sections. The occurrence of these changes also bring along challenges, which demand more skills and efforts for adjustment and adaptation. Hence, negotiating the adolescent stage is characterized by massive vulnerability and stress (Kimmel & Weiner, 1995). This section elaborates on how adjustment challenges influence risk-taking behaviour for negotiating adolescents by looking at self or body image and peer pressure, and environmental factors juxtaposed with self-esteem.

It is evident from the discussion above that the body undergoes a lot of transformation and begins to take a new shape for both sexes during the adolescent stage, for example, muscle growth, breast development, and pubic hair growth. Therefore it is not surprising that many or virtually all adolescents pay a lot of attention to how their body looks. In fact, adolescents intensely focus on their physical self (Sigelman & Rider, 2006). Therefore, fitting a new body image into a sense of self becomes a crucial developmental task for adolescents (Gouws et al., 2010). For instance, they may uncomfortably experience their body as unacceptable if it does not match the standards of peers or society. Therefore, adolescent's perspective about these changes is largely driven by the media's perception on what the ideal body should be. As a result, boys tend to focus on building their muscles whereas girls constantly guard their weight to a point of being obsessed about having "skinny" or thin bodies (Nielsen, 1996; Gouws et al., 2010).

Dissatisfaction with the body during this stage is quite common, since it is regulated by how others see it, as well as media influences. Both the society and media send messages that say that overweight boys are more tolerated and are more seen as attractive and socially desirable than overweight girls. In addition, the body postulated by the media is often unrealistic and unattainable for many negotiating adolescents (Gouws et al., 2010; Nielsen, 1996). As a result, most girls are constantly concerned about their body weight (Balk, 1995), and they are therefore, placed at the risk of compromising their health by harmful dieting. Hence it is no surprise that eating disorders are usually prevalent during this stage, especially for girls (Nielsen, 1996; Umeh, 2009). Most females experience more problems with body image than their male counterparts. Many feel that they ought to be thinner and therefore engage in dangerous dieting and excessive exercising in an effort to achieve the so called “perfect body” (Umeh, 2009).

Apart from risky dieting and over-exercising, body image affects the development of adolescents’ self-concept and their self-worth or self-esteem (Gouws et al., 2010). Hence, there is a link between self-esteem and how adolescents perceive their self-image or body because adolescents who are usually more confident and extroverted tend to be those who regard themselves or their body as attractive, than their counterparts who consider themselves as less attractive or unattractive (Gouws et al., 2010; Impett, Sorsoli, Schooler, Henson, & Tolman, 2008). For example, girls who dislike their bodies (especially due to body weight) feel bad and worthless about themselves, and they eventually develop a negative self-esteem (Nielsen, 1996).

2.1.6. Transition to University

Having looked at adolescent stage in detail, and what the stage is all about in the previous sections, it is equally important to consider what it means to be a student at university. This section will briefly explore the meaning, characteristics, challenges and matters that delineate on what it is like to be a student at university. There are a lot of note-worthy varieties when one is a student at a university as compared to being a primary or high school learner. The unfolding paragraphs will now focus on students at university.

Late adolescent stage, according to Peltzer et al. (2001), is roughly a period of transition in emotional development, educational and career development, alteration in living arrangements, and changes in economic status. They further indicate that this stage marks the acquisition of adult roles, responsibilities and social skills. For most, this transition does not take place independent of the transition to university as they seek further developments pertaining to their education and career endeavours.

As far as being a student at a university is concerned, it is important to comprehend the transition from high school to university prior to any further discussions. The transition from high school to university is an intricate process that has gained ample attention from educational professionals and researchers (Bray & Born, 2004). This transition, according to Bray and Kwan (2006), signifies a major and threatening life stressor for most students. Thus, the shift from high school to university is not an easy process.

The transition to university marks a process characterized by change, ambiguity, and it demands adjustment on a number of previously prominent domains (Bray & Born, 2004). For instance, university students have to leave home to move to a shared residence and they also have to shift towards independence. However, this transition brings about different experiences that are unique to individuals, and it is viewed as a process rather than a single event occurrence (Bray & Born, 2004). Therefore, it implies that this transition can continue for a longer period of time to those who struggle with swift adjustments.

The changes evident and encountered by students during this transition could be social, physical, emotional, academic related and even cultural in nature, although the transition effects are manifested in various forms (Bray & Born, 2004). For example, university students have to deal with far more demanding courses than in high school. Bray and Kwan (2006) explain that these demands don't necessarily require a lecture and tutorial attendance or laboratory practices only, but they also require more discipline to work alone, which needs diligent and efficient time management.

The transition to university attendance is often linked to more physical and psychological problems, and it is perceived as a time of chronic stress (Bray & Kwan, 2006). A recent Canadian study by Gall et al. (2000, in Bray & Kwan, 2006) indicates that most university students often experience their lowest level of well-being upon university entry. These problems or low levels of well-being are not only limited to the above, but they include drug abuse, alcohol consumption, violent and self-injurious behaviour. The easy access and disposal of many things to university students in their environment than in the past, places university students at more risk (Gouws et al., 2010; Feldman & Elliot, 1990; Louw & Louw, 2007). According to Peltzer et al. (2001), the risk for university students is also exacerbated by the amount of freedom they have at university because most students are no longer under direct parental or guardian supervision.

In a nut-shell, it is evident that the transition from high school to university is not an easy one. Most students have to make serious adjustments including living far away from home. Interruptions in academic, social, emotional, and health are usually prominent during this transition. The university environment makes it difficult for university students to avoid risk-taking behaviour. Therefore, effective adjustments contribute to better adapted students who are less inclined to engage in risk-taking behaviour.

2.2. Adolescent's self-esteem

Adolescent stage is a crucial developmental period for the formation or construction of self-esteem (Impett et al., 2008). This suggests that self-esteem has an important role to play within adolescent stage. In other words, the adolescent stage is incomplete without the development of self-esteem. This statement paves the way for considering the development of self-esteem, which will be discussed in the next paragraphs. Rosenberg (1965) states in Kavas (2009, p187) that "Self-esteem refers to self-adjustments of personal worth and global feelings of competence and self-acceptance".

Before launching into the discussion of self-esteem development, it is important to note that identity formation and discovery of the self cannot be separated from terminologies such as self-concept, self-understanding and self-esteem (Heaven, 2001). This means that the development of self-esteem goes hand in hand with identity formation during the adolescent stage.

2.2.1. What shapes self-esteem?

After childhood, self-esteem has to be further modified during the adolescent stage whilst new dimensions and other factors are added (Louw & Louw, 2007). This indicates that there are vital factors which play a role in the development of self-esteem besides how adolescents view themselves and how they perceive how others think of them. Some of the factors or dimensions are not limited to, but include the following: physical appearance, body image, close friendships, relationship with peers, and achievement.

The definition of self-esteem by Sadock and Sadock (2007) indicates that both internal and external aspects of a person play a pivotal role in shaping self-esteem. They define self-esteem as a measure of one's sense of self-worth based on one's apparent success and achievements, including the perception of how much one thinks is valued by peers, family members, teachers, and society in general. For instance, internal aspects refers to the manner in which one places value on himself or herself and how he thinks and views one's self. On the contrary, external aspects refer to how one is viewed and valued by peers, family members and the community. Therefore, these views are necessary for the formation and development of self-esteem, and they will be respectively explained in the following paragraphs by looking at self-evaluation.

Self-evaluation has a crucial impact on the development of and how self-esteem is shaped. Self-evaluation refers to a heedful judgement pertaining to the significance and importance of oneself or facts underpinning the individual (Heaven, 2001). Self-evaluation comprises of few aspects which facilitate the development of self-esteem.

The first one has to do more with the *ideal self*, in a sense that individuals strive to attain the ideal self (what one wishes to be like) and *self-actualisation* which possible leads to personal growth (Heaven, 2001). Therefore, a low self-esteem could result if the ideal self is unattainable or if there is a discrepancy between the ideal self and the real self.

The second aspect deals primarily with individuals' beliefs concerning how others view that individual. This is made apparent by Gouws et al. (2010) who substantiate that the rigorous determinants of self-worth for the adolescent is embedded in their relationship with peers, close friends and romantic partners.

That is why it is extremely important for them to know what others or their peers think of them, that is, how they look, how they should dress, how they should behave, to mention just a few. A negative feedback from their peers affects their self-worth (that is, they might feel worthless, rejected, and undermined) more than a positive one, and they will eventually conform to the standards of their peers in order to feel valued and confident again.

Based on the above, one may conclude that an adolescent's ability to accurately and consistently perceive what others think of him or her is of great significance. Younger adolescents are more likely to be influenced by their parents and teachers' beliefs than older adolescents who tend to value the opinions of their peers (Heaven, 2001). However, adolescent's self-esteem is largely mediated by positive feedback received from a peer group than family members, that is, they value and seek out a peer group that offers acceptance, regardless of negative behaviours associated with that group (Coleman & Hendry, 1991). For example, conflicts between rebellious adolescents and parents can be explained as those adolescents who usually pay heed to their peers than to what their parents say to them.

Self-esteem is linked to both general social adjustment and stability of the self-concept. Work by Coleman and Hendry (1991) indicated that adolescents with a high self-esteem had a better social adjustment and a more stable self-concept than their counterparts with low self-esteem. Similarly, negotiating adolescents with high self-esteem are likely to be self-confident, better adapted, satisfied, and usually consider themselves to be attractive than those with low self-esteem (Baumeister et al., 2003).

Nielsen (1996) also points out to athletic or sports ability and academic achievement as other factors linked to self-esteem. This means that adolescents' ability to achieve good marks or perform exceptionally well at school can build their self-esteem or destroy it if their ability is lacking and have poor performance academically. In addition, Gouws et al. (2010) explain that adolescents who have confidence, and are motivated (as having a high self-esteem) are inclined to perform well at school than their counterparts (with low self-esteem). Other common studied factors contributing to self-esteem include: race or ethnicity, socio-economic status, educational achievement, pubertal timing, religiosity and body satisfaction (Impett et al., 2008). Some of these factors have been discussed already in the previous sections.

2.2.2. Healthy self-esteem

Self-esteem is essential for promoting both mental and physical health, as well as preventing behavioural and emotional problems such as aggression and delinquent behaviour (Trzesniewski et al., 2006). In particular, a high self-esteem is associated with an overall sense of well-being (Kavas, 2009). Furthermore, Trzesniewski et al. (2008) also state that there is ample evidence that a high self-esteem is linked to security and closeness in relationships, which could probably be associated with a future mental health and connectedness. From the above statements it can be deduced that a high self-esteem is equal to (or same as) a healthy self-esteem. Therefore, a high self-esteem and a healthy self-esteem will be used interchangeably.

Adolescents with a high self-esteem possess the following facets as personal assets: self-confidence, leadership potential, hard-working and dedicated, and the ability to make good impression (Coleman & Hendry, 1991). Furthermore, they: persist or thrive in the face of failure or show resilience; have personal sense of self-respect and self-worth; good social relationships, academic progress, and career expectations and success (Baumeister et al., 2003; Kavas, 2009; Trzesniewski et al., 2006). Overall, it has been made apparent from the above paragraphs that a high self-esteem in adolescents is associated with a good behaviour, a good health and a healthy well-being. The next section will discuss low self-esteem and its implications.

2.2.3. Low self-esteem

It is logical to say that a low self-esteem is somehow related to poor health based on the above discussion on high self-esteem. According to Coleman and Henry (1991), a low self-esteem is associated with depression, anxiety, and poor academic performance. This association suggests that those with a low self-esteem are more likely to be vulnerable to either abnormal behaviour or unhealthy lifestyle than those with a high self-esteem.

What has been mentioned above suggests that adolescents with a low self-esteem are exposed to uncomfortable situations and dilemmas. In support of this statement, Wild et al. (2004) contend that individuals with a low self-esteem are more prone and vulnerable to engage in risky behaviour than those with a high self-esteem. In association with a low self-esteem, adolescents usually possess the following characteristics or feelings (Baumeister et al., 2003; Coleman & Hendry, 1991; Trzesniewski et al., 2006; Wild et al., 2004):

- They feel socially isolated and rejected.
- Have a sense of incompetence in social relationships.
- They believe that they are not respected and often not understood.
- They are more likely to drop out of school and few make it to university.
- They run a higher risk of being convicted of crime in adulthood.
- They are more likely to experience financial and work problems in adulthood.
- They grow up to have more mental health problems like depression and anxiety during adulthood.
- They express more negative attitude toward many events, circumstances, people and other realities.
- They might appear withdrawn and quite at times, and cannot ask a teacher for help in class; as result they receive less attention and support from parents, teachers and even their peers.

2.3. Risk-taking behaviour: definition and a brief background

In the previous sections, more focus was solely on understanding adolescent stage, adolescents, and self-esteem. Now, the focus shifts to the exploration of risk-taking behaviour. There are several definitions of risk-taking behaviour by various researchers, and only a few of those definitions are discussed in this study. Risk-taking behaviour is defined as any behaviour encompassing negative consequences or loss, which is motivated by perceived positive consequences or gain (Essau, 2004; Leather, 2009). Thus, the balance between losses and potential gain is essential in order to comprehend risk-taking behaviour.

A definition by Byrnes, Miller, and Schafer (2004) refers to risk-taking behaviour as the execution of options which usually bring about negative consequences as an outcome. That is, the behaviour is labelled to be “risky” if it contains more negative consequences than positive ones and vice versa. Risk-taking behaviour can also be viewed as part of a syndrome of risk behaviours (Leather, 2009), which is explained, according to Protogerou, Flisher, and Morojele (2012) as a broad propensity for people to engage in numerous risk behaviours.

Irwin and Ryan (1989, in Leather, 2009) refer specifically to *adolescent risk-taking behaviour* as less experienced individuals who engage in potentially destructive behaviours, with or without understanding the consequences of the actions thereof.

According to Hill (1993, in Carr, 2003, p270), “adolescence is a risky period”. This definition indicates the complexity, challenges, vulnerabilities and circumstances exposed to negotiating adolescents. Hence, risk-taking behaviour should reasonably be anticipated or somewhat expected during adolescent stage. Furthermore, Lloyd (1985) explains that adolescents have to cope with significant personal changes, and at the same time, they also have to adapt to new roles in their social environment, thus making their experience in this stage a stressful and degrading one at most times. To conclude this paragraph, one can point out that effective adjustment and coping skills are a prerequisite for negotiating adolescents in order to make the transition less difficult, less complicated and less stressful.

The following factors are necessary for effective and smooth transitioning or adjustment for negotiating adolescents as illustrated by Carr (2003): high intellectual functioning (IQ), easy temperament, high self-esteem, self-control, positive belief and optimistic attribution style or approach. In cognizant to seeing self-esteem as a crucial factor for a sound adaptation within adolescent stage, this research seeks to determine whether self-esteem has a direct link to adolescents’ risk-taking behaviour.

An integrated definition deduced from the above mentioned definitions of risk-taking behaviour will be used in this study. Thus, risk-taking behaviour refers to the propensity of individuals with limited experience to execute behaviour options which are destructive (or harmful to self or others) and usually contain more losses or negative consequences as opposed to positive consequences or gain. Examples of risk-taking behaviour include the following amongst others: suicidal behaviour, substance abuse, self-injurious behaviour, violent behaviour, delinquency, eating disorders and sexual-risk behaviour (Essau, 2004; Leather, 2009; Flisher et al., 1993a; Michael & Ben-Zur, 2007; Umeh, 2009). These examples also include cases or incidents whereby an individual is prone to harm, trauma, death, disability and extreme dangers to one-self and others, resulting in dysfunction for both physical and psychological aspects.

2.3.1. Adolescent's common risk-taking behaviours

Sexual and reproductive health, together with substance abuse constitutes an integral part of adolescent health related problems (Wild et. al, 2004). Thus, adolescents and young adulthood are characterised by numerous engagements in risk-taking behaviours (Galván, 2012). Several studies have been consistent in their agreement or findings in documenting these engagements or risk-taking behaviours, and they have classified others as the most common risk-taking behaviours among adolescents throughout the world (Leather, 2009; Timmermans et al., 2008; Wild et al., 2004). They have classified sexual risk, substance abuse (that is, alcohol, drugs, and cigarette smoking), and their negative consequences to be a common phenomenon among adolescents the world over. In this study, further references and investigations will be limited to these common risk-taking behaviours, and they will be expatiated as the discussion unfolds in the following subsections.

2.3.1.1. Sexual-risk behaviour

In most cases, sexual-risk behaviour has been solely defined by (or limited to) one or two risk indicators which are usually accounted for by the number of sex partners or the frequency of sexual intercourse (Kalichman et. al, 2006). However, this study adopts a multi-factorial cause that defines sexual risk behaviour by examining among other factors, the number of sex partners, the frequency of sexual intercourse, the quality or nature of the relationship of sex partners, the use of contraceptives or condom use, and the effect substances have on sexual-risk (Gouws et al., 2010; Kalichman et al., 2006; Morojele et al., 2006; Timmermans et al., 2008; Wild et al., 2004).

Adolescents' sexual activity internationally, according to Flisher et al. (1993e), is marked by early onset, multiple partners, and a low incidence of contraceptive usage. Thus, high rates of sexually transmitted infections and unwanted pregnancy are common among adolescents and are on the rise the world over (Flisher et al., 1993e; Timmermans et al., 2008). Sub-saharan Africa (including South Africa, Zambia, Tanzania, among other countries) for instance, is marked by carrying the greatest burden of HIV/AIDS, with over 60% of 41 million people living with HIV/AIDS in the world are living in Sub-saharan Africa (Kalichman et al., 2006; UNAIDS, 2007).

South Africa was declared the largest country with the most HIV infection rates the world over (UNAIDS, 2007). As a result, hospitals were experiencing difficulties in managing and dealing with escalated numbers of patients with HIV-related diseases (Gouws et al., 2010). South African adolescent's sexual risk behaviour is also a matter of grave concern because it is associated with high prevalence rates of HIV/AIDS (Wild et al., 2004). Thus, indicating an increasing trend of sexual risk behaviour among adolescents in South Africa. In addition, high risk-sexual behaviour among adolescents has been linked to their increasing susceptibility to HIV infection, thus high prevalent rates of HIV/AIDS amongst adolescents. That is, 34% of all new HIV infections in the year 2005, according to Gouws et al. (2010), were reported to be among the age group of 15 – 24 year olds. Buthelezi, Mitchell, Moletsane, De Lange, Taylor, and Stuart (2007) also revealed that youths between the ages of 15 and 24 are at higher risks in terms of HIV prevalence and incidence. Although many adolescents are at a higher sexual risk, many do not know their HIV status (MacPhaila, Pettifor, Moyo & Rees, 2009).

Regular HIV testing and the knowledge of one's HIV status has become an integral part in the treatment and preventative measures of HIV/AIDS (Buthelezi et al., 2007; MacPhaila et al., 2009). According to Makiwane and Mokomane (2010), HIV testing is a significant strategy that is necessary for behaviour change, and it influences condom use or safe sex practice in the fight against HIV/AIDS. However, they also revealed through their study that a less number (less than one-third) of adolescents have been tested for HIV in South Africa. Of the few who have reported being tested, more females than males were the majority who ever reported being tested for HIV (Makiwane & Mokomane, 2010), suggesting high sexual-risk behaviour tendencies among males by being ignorant to HIV testing. Overall, the need for more voluntary counselling and HIV testing is still far from being realized or met (MacPhaila et al., 2009; Makiwane & Mokomane, 2010).

Sexual-risk behaviour, although common in both sexes, it is characterized differently by each gender. Although females are not exempt from carrying out sexual-risk behaviour, a qualitative study by Morojele et al. (2006) found that sexual-risk was more common among males than females. The study also explained reasons for sexual-risk behaviour among both sexes.

Females on the one hand, reported unsafe sex or sexual-risk because of their desire to please their sexual partner and their inability to resist sexual advances from males out of fear of rejection or being beaten. However, males on the other hand cited the success of attaining a status (that is, streetwise, powerful, boss), belief that condoms dampens the pleasure of sexual intercourse, and the perceived thrill of having multiple sex partners as impediments to their safe sex practices, hence their high reported sexual-risk behaviour.

Although, males have greater influence than females on sexual-risk behaviour, females still remain high on sexual-risk behaviour at face value (Buthelezi et al., 2007; Kalichman et al., 2006; MacPhaila et al., 2009; Timmermans et al., 2008). For instance, of the new reported 57 1000 HIV infections in South Africa in the year 2005, about 90% of those infected were women within the age group of 15 - 24 years, suggesting that sexual-risk behaviour is more common in females than males (Gouws et al., 2010).

Flisher et al. (1993e) contends the former by indicating that sexual-risk behaviour is more common in males than females, and this trend is consistent with international findings. Flisher and his colleagues, further argued that more males than females display more tendencies of sexual-risk, because males are more likely to commence sexual activity at an early age, to have engaged in sex with multiple-partners or a partner they hardly knew or knew for a short period, to have a greater number of sexual partners, to have sexual encounters more frequently, and are likely not to use condoms.

Most South African youths know and understand very well the importance of condom use and that it prevents HIV, sexually transmitted infections, and unwanted pregnancy (Hendriksen, Pettifor, Lee, Coates, & Rees, 2007). Nonetheless, inconsistent condom use is still prevalent among adolescents, despite their knowledge that it remains by far the most effective protection against HIV and other sexually transmitted infections, especially for those who are sexually active. A study by Hendriksen et al. (2007) revealed that 87% of South African youth reported that condoms are readily available and easily obtainable because they are provided by the government free of charge in the public sector and are placed in accessible venues like clinics, and schools or universities, and yet most still engage in unsafe sexual intercourse.

Consistent condom use or safe sex practice can be enhanced by one or two factors. Some of these factors amongst others are described by Hendriksen et al. (2007) as effective communication between partners, coercion linked to sexual power dynamics, sexual power dynamics, and sexual gender. For instance, open and efficient communication among partners promotes safe sex practice as compared to a couple with communication difficulties, whereby the socio-economic dominant partner makes most of the crucial decision alone. For example, young partners or couples who were more likely to have used a condom during their most recent sexual encounter, were probably young partners who openly talked about condom use than those who never talked about condom use initially (Hendriksen et al., 2007).

Both sexes display tendencies to refrain from condom use, although the motive behind this risky behaviour is unique to each gender. On the one hand, females intentionally refrain from condom use in order to conceive, please their sexual partner out of fear, and belief that they have less decision making powers. On the other hand, males deliberately refrain from condom use in order to avoid reduction of the sexual pleasure during intercourse, peer pressure and the thrill of the behaviour thereof (Makiwane & Mokomane, 2010; Morojele et al., 2006).

Inconsistent condom use or condom use is influenced by various factors, which affect condom use either negatively or positively. According to Hendriksen et al. (2007), factors such as alcohol or substance abuse, self-efficacy, risk perception, knowledge of one's HIV status, and early age of sexual engagement, negatively or positively influence condom use. For example, adolescents who adopt a low sexual risk perception are less likely to use a condom (or use it inconsistently), whilst those who uphold a high risk sexual perception are more likely to use a condom regularly or consistently, thus safe sex practice. About 31% of young people, according to Makiwane and Mokomane (2010), reported that they never used a condom when they had sex with their recent partners in the past twelve months.

Most adolescents are engaged in sexual intercourse with more than one partner. Makiwane and Mokomane (2010) confirm through their study, that multiple sexual partners are a common practice among young people in South Africa. They also revealed through qualitative studies that concurrent sexual partnerships are normative in South Africa.

This explains the current escalated hype of sexual-risk behaviour among adolescent and the country as a whole. More details and traits about multiple sexual partners have been intertwined throughout the discussion in this sub-section.

Early sexual debut is a characteristic of sexual-risk behaviour, regarded as a risk factor (Flisher et al., 1993e; Hendriksen et al., 2007; Morojele et al., 2006). In cognizant to early sexual debut, sexual risk behaviour is thus characterized differently in various racial groups. For example, a study by Makiwane and Mokomane (2010) revealed that more blacks engage in sex earlier than their racial counterparts, whilst Indians were found to be the least racial group that engage in sex earlier. The trend is similar when comparing young people in urban areas and those in rural areas, whereby more urban young people engage in sex earlier than those in rural areas, with those staying in the farms being the least group of young people to delay sexual debut (Makiwane & Mokomane, 2010).

A link between substance use or abuse and sexual-risk behaviour has been rigorously established by many researchers (Gouws et al., 2010; Kalichman et al., 2006; Morojele et al., 2006; Timmermans et al., 2008; Wild et al., 2004), whereby substance use or abuse was identified as a contributing factor that leads to sexual-risk behaviour. For instance, formal and informal alcohol serving places make up to 94% of places where people find or meet their new sexual partners (Kalichman et al., 2006). A study by Timmermans et al. (2008) revealed that the increasing number of teenage pregnancies and sexual transmitted infections are accounted for by alcohol or drug dependence amongst other factors such as psychological disorders, and education failure.

Sexual-risk behaviour is reported by young people to be linked to drug use because they heighten or induces sexual arousal; impairs judgments which cause engagements in irresponsible sexual behaviours; and they are related to commercial sex work (Morojele et al., 2006). Furthermore, research revealed strong associations among alcohol use within sexual contents, sexual risk behaviour, and sensation seeking (Kalichman et al., 2006). For example, alcohol use is directly linked to unfamiliarity with sex partners and inconsistent condom use in circumstances where sex was preceded by alcohol consumption.

A low self-esteem is negatively related to sexual-risk behaviour. A study by Wild et al. (2004) confirms that low self-esteem undermines safe sex practice, abstinence, monogamy, and condom use amongst young South Africans. Their findings also suggest that low self-esteem in the family context highly correlates with sexual risk behaviour for both boys and girls. That is, interventions geared towards the improvement of communication between adults and adolescents within the home context could possibly reduce sexual-risk behaviour among adolescents (Wild et al., 2004).

Overall, sexual-risk behaviour has been identified as a major form of risk-taking behaviour amongst adolescents. Sexual-risk behaviour has also been clearly defined, explained and linked to various causes and factors that directly or indirectly lead to such behaviour. The next section will explore the use or abuse of substances as a major form of risk-taking behaviour amongst adolescents by looking at alcohol use, cigarette smoking, dagga smoking, and illicit drug use.

2.3.1.2. Substance abuse

a) Alcohol

Alcohol is the most predominant substance used in South Africa thus far, with about 5 billion litters of alcoholic beverages in consumption annually (Kalichman et al., 2006). Alcohol is also the most frequently used substance among adolescents (Baumeister et al., 2003; Lloyd, 1985), which adolescents experiment with before they get to high school (Gouws et al., 2010). With such a widely use of alcohol as indicated above, it is therefore, apparent that more and more adolescents are vulnerable to alcohol consumption. Therefore, it is apparent as deduced from the above that adolescent's indulgence in alcohol beverages warrants for immediate attention and action in South Africa.

Heavy or excessive alcohol drinking is considered a serious problem for various reasons not limited to, but includes the following: death, car accidents, unsafe sex practice, damaged liver, damaged heart, damaged central nervous systems, damaged gastrointestinal system, destroyed brain cells and increases risk for high blood pressure (Lloyd, 1985; Balk, 1995; Gouws et al., 2010).

To elaborate, few examples will be explored: **i).** Alcohol has the potential to cause death if greatest levels of concentration within the body are present, and then breathing will be restrained (Gouws, et al., 2010). **ii).** Many fatal and severe road or car accidents are accounted for by drinking and driving or driving under intoxication (Gouws et al., 2010; Flisher, et al., 1993b; Umeh, 2009), which also marks one of the greatest dangers related to alcohol use. In addition, various studies also indicate that psycho-social consequences of prolonged heavy alcohol drinking also affect the national economy, family stability and adolescents' future (Balk, 1995; Flisher et al., 1993b).

An increase in age is relatively linked to an increase in alcohol use in South Africa (Flisher et al., 1993b; Kalichman et al., 2006). For example, older adolescents are more likely to consume large quantities of alcohol, than younger adolescents. South African males (39%) and females (23%) within the age range of 10 and 21 years, consume alcohol (Kalichman et al., 2006). Therefore, late adolescents are at more risk to alcohol consumption by virtue of their chronological age.

More males than females indulge in alcohol. A study by Kalichman et al. (2006), revealed that 78% of men and 30% of women had reported current use of alcohol. On the one hand, studies on the patterns of gender and alcohol show that males are heavy consumers of alcohol than females (Flisher et al., 1993b; Kalichman, et al., 2006; Morojele et al., 2012). On the other hand, unplanned pregnancies were linked to alcohol use for females (Morojele et al., 2012). Thus, alcohol consumption is unique to each gender. The consequences and the extent of alcohol usage amongst South African adolescents has been shown and explained above. The variety of alcohol consumption has also been linked to age and gender whereby more adolescents who are older and males are characterized as heavy alcohol consumers. The next section will discuss drug use

b) Cigarette smoking

Adolescent cigarette smoking has been on the rise in past years. On the one hand, its prevalence has significantly increased globally (Kavas, 2009). The gradual rise in the number of adolescents who smoke cigarettes has been a mitigating factor for boosting the profile and smoking cessation strategies in developed countries (Panday, Reddy, & Bergström, 2003). The prevalence of women and that of adolescents who smoke cigarettes is also on the rise (Gouws et al., 2010). On the other hand, a more recent study by Tucker, Martínez, Ellickson, and Edelen (2008) indicate a decline in adolescent smoking in the past decade. Despite the decline, their study also found that cigarette smoking continues to thrive among adolescents, and it is declared a significant long-term health problem for most adolescents. Overall, it is evident that adolescent cigarette smoking is a major problem, although findings by different studies do not agree on its prevalence in the past decades.

A high incidence and prevalence of adolescent cigarette smoking is confirmed in developing countries. According to Madu and Matla (2003), recent studies show a smoking prevalence of more than 50% among African and Coloured man. In South Africa, adult and adolescent smoking is approximately within similar range at about 25% each (Panday et al., 2003). The previous statements indicate that adolescent cigarette smoking is an on-going serious matter across adolescent and adulthood in developing countries. Since cigarette smoking is indicated as the most commonly used or abused substance besides alcohol (Gouws et al., 2010), many people are placed at greater risk for smoking cigarettes.

The risks posed to most individuals who smoke cigarettes are plenty, which are made evident by deteriorating health in the long run, as one example. Problems associated with cigarette smoking are explained by Gouws et al. (2010) and they include the following amongst others: heart attacks, strokes, chronic bronchitis, emphysema, and cancer (of the larynx, mouth, throat, lungs and pancreas). In particular, pregnant mothers who smoke cigarette, according to (Nielsen, 1996), run the risk of miscarriage, stillbirth, and premature babies who are highly predisposed and vulnerable to many illnesses after birth. However, many individuals continue to smoke irrespective of such debilitating health concerns.

Cigarette smoking still remains a liable preventable determinant of morbidity and mortality in South Africa, despite substantial evidence that show negative effects or detriments of cigarette smoking (Madu & Matla, 2003). For example, they indicate in their study that about 25 000 deaths (that is, 1 in nine deaths) were related to cigarette smoking in South Africa by the early 1990's. Of late, they report that lung cancer has respectively doubled and tripled over the years among coloured man and women alike. This continued risk of cigarette smoking despite its severe consequences is mitigated by various factors.

The factors linked to cigarette smoking have been well documented in both developed and developing countries (Panday et al., 2003), and they include amongst others: socioeconomic status, ethnicity, family, environment and peer pressure as major contributing factors to cigarette smoking. Peers and family serve as predictor variables for smoking cigarette over a period of time (Tucker et al., 2008). Therefore, non-smoking peers and less family exposure to cigarette smoking can serve as protective or risk factors because of their influence and impact towards adolescent smoking cigarette. For example, a study by Gouws et al. (2010) confirmed that adolescents who were less likely to smoke cigarettes were those whose parents did not smoke nor approve of their children to smoke.

Ethnicity has been highlighted above as one of the major contributor to cigarette smoking. As such, cigarette smoking has been linked to various racial groups. A study by Panday et al. (2003) found that cigarette smoking was prevalent amongst Coloureds (46.7%) and least prevalent amongst Blacks (19.3%) in comparison to any other group. Successively, both Whites (32.6%) and Indians (26.9%) followed after the Coloured racial group in terms of their smoking prevalence.

Age is another factor that was linked to cigarette smoking because most young people initiate cigarette smoking at an early age. A study by Madu and Matla (2003), shows a positive correlation between age and the prevalence of cigarette smoking. They also found that many people usually smoke their first cigarette within the early stages of puberty or adolescent. It can be said that cigarette smoking increases with age over a period of time. For instance, many adult cigarette smokers have initiated their smoking during adolescent stage (Flisher et al., 1993c) and gradually progressed with the smoking behaviour into adulthood.

Those who smoke cigarette at an early age are more likely to continue smoking at a later stage because nicotine is highly addictive than alcohol or cocaine (Gouws et al., 2010). However, these adolescents also run the risk of becoming heroin users before they reach the age of eighteen (Tucker et al., 2008). The mean age for cigarette smoking was 14.54 years as indicated by Madu and Matla (2003) in their study. It is evident that more young adolescents are vulnerable and likely to initiate cigarette smoking now than in later stages of life. Adolescents who initiate cigarette smoking at an early age face consequences associated with the behaviour. Tucker et al. (2008) have linked early onset of cigarette smoking with subsequent engagement in delinquent behaviour. Heavier smoking at the age of sixteen was found to be a predictor of poor academic performance and great exposure to smoking at the age of 18 (Tucker et al., 2008). Thus, the academic level of adolescents also contributes to cigarette smoking, or vice versa.

A correlation for academic performance and smoking was established using a cross sectional study (Tucker et al., 2008). A study by Madu and Matla (2003) also found a significant correlation between cigarette smoking and school standards from their participants. This means that there is a relationship between cigarette smoking and being at certain level of academics or studies. For example, a study by Flisher et al. (1993c) revealed that 10.2% of adolescents already smoked cigarette in grade 8, whilst the behaviour progressed to about 35% for males in grade 11 and about 20% for females in grade 12. Furthermore, poor academic performance has been linked to early cigarette smoking by Tucker et al. (2008).

Tucker and colleagues' study also maintained that adolescents with poor academic performance at the age of eighteen tend to become heavier smokers by the age of 23 (Tucker et al., 2008). That is, the level of smoking and number of cigarettes smoked in a day increase at university or during late adolescent stage. Nonetheless, initiation and smoking tendencies peaks in high school. A breakdown of cigarette smoking by gender follows in the next paragraph.

Gender differences in risk factors for adolescent cigarette smoking are well established (Tucker et al., 2008). Thus a variation of cigarette smoking within gender is evident and apparent in most studies. According to Kavas (2009), cigarette smoking and illicit drug use are more common amongst males than females. Similarly, Madu and Matla (2003) have found in their study that cigarette smoking was generally associated with more males than females, indicating that more males smoke cigarette than their female counterparts.

In Turkey, for example, current studies show a 50% rate for cigarette smoking amongst university students, with a predominant number of male students than females (Kavas, 2009). Furthermore, risk-taking behaviour was declared a stronger predictor of experimentation and regular smoking for boys than girls (Tucker et al, 2008).

Cigarette smoking was also linked to self-esteem, other than the demographics outlined above. In terms of self-esteem, a relationship between low self-esteem and health behaviour problems like cigarette smoking has been established (Kavas, 2009). Although many studies are not in agreement, several studies have been able to prove or confirm a relationship between low self-esteem and increased cigarette smoking tendencies during adolescent stage. For example, lower school self-esteem significantly correlates with cigarette smoking (Wild et al., 2004). This means that adolescent cigarette smoking is common amongst those who have academic difficulties because they tend to uphold a low self-esteem. Overall, self-esteem has a significant role in regulating adolescents' cigarette smoking behaviour.

There are other risk factors that influence cigarette smoking which have not been mentioned thus far. One of such risk factors pertains to the availability and accessibility of cigarettes. In South Africa, the use of tobacco or cigarettes is limited in public places, and cigarette smoking is regulated by law enforcements (Panday et al., 2003). For example, the Tobacco Products Control Amendment Act of 1999 is one among other law enforcements that restricts and controls the advertisements of cigarette. These considerations are aimed at reducing the harm caused by cigarette smoking and to the number of those who smoke. However, the sales of cigarette smoking continue to thrive despite stringent and rigorous anti-smoking campaigns and policies.

Adolescents have pointed out major challenges (or temptations) contributing to their cigarette smoking tendencies as a result of advertisements and cigarette accessibility (Panday et al., 2003). In South Africa, for example, 89% of 200 young adolescents (within 12 – 14 years of age) reported success in buying cigarettes from retail outlets although legislation has banned sales to children or adolescents under the age of 18 years (Madu & Matla, 2003). Therefore, regardless of law enforcements, many adolescents still remain vulnerable as far as cigarette smoking is concerned.

In terms of supplementing and improving current intervention strategies to address the problem of cigarette smoking amongst adolescents, a qualitative study by Panday et al. (2003) suggests the following as indicated by adolescents in their study: adolescents reported that a reciprocal relationship between the community and school in facilitating behaviour change within their context could be effective. This shows the need to address psychosocial determinants of smoking and smoking cessation while taking into considerations ethnic, cultural and socioeconomic status.

c) Dagga and Illicit Drug Use

Adolescent's drug use and prevalence differs from one drug to another. More illicit drugs than legal drugs are used in general (Madu & Matla, 2003). It is apparent that adolescents engage in the use or abuse of drugs, let alone legal drugs. This section will explain the prevalence and nature of adolescent drug use or abuse. Illicit drugs in this study were limited to the following: dagga, heroin, cocaine, mandrax, ecstasy, methamphetamine, glue sniffing or thinners, injectable drugs, and hallucinogenics (that is, LSD, Nexus, MMDA). For the purpose of this study, dagga and illicit drug use will be discussed separately. The first part of the unfolding discussion will look at dagga smoking and it will be followed by illicit drugs use.

Dagga smoking

Dagga (or cannabis) smoking has been generally accepted as a herb to be smoked. According to Madu and Matla (2003), dagga is the most commonly used drug amongst adolescents. To illustrate, a study on substance use found a higher percentage (7.5%) of dagga smoking than (0.5%) injectable drugs (Flisher et al., 1993d). Furthermore, dagga smoking is reportedly high in South Africa, particularly amongst males (Peltzer et al., 2001). Their study also found that most men had reported smoking dagga, cigarette, and using inhalants more than women. These findings were similar to a study done by Kavas (2009) on substance use among Turkish university students.

Dagga smoking can be caused or motivated by many reasons. For example, its use by women in most communities is usually motivated by the popularly known or perceived effect it has on weight loss (Madu & Matla, 2003). Furthermore, self-esteem and sensation seeking are cited as part of the causes of dagga smoking.

On the one hand, a study by Peltzer et al. (2001) has linked low self-esteem to high levels of dagga smoking. On the other hand, they have linked sensation-seeking to dagga smoking, and other risk behaviours like alcohol consumption and violent behaviour.

According to Madu and Matla (2003), dagga is often used by adolescents when they are bored, tired or stressed, and for entertainment purposes. This indicates that boredom and depression remain the most crucial excuse cited by adolescents for using drugs. These findings are common and supported by a literature review done by Wegner and Flisher (2009), where they have managed to link leisure boredom to adolescent risk-taking behaviour. Thus adolescents' social world and recreation activities should be in place and functional in order to curb the scourge of adolescent drug use (Madu & Matla, 2003).

The use of legal drugs and cannabis (or dagga) usually precedes the use of any other illicit drugs in early adulthood (Morejele & Brook, 2001; Ramlagan & Peltzer, 2012). For example, those who use other illicit drugs indicated that they have first tried or at least used dagga and a combination of dagga and mandrax (Plüddemann, Parry, Flisher, and Jordaan, 2008). This is also evident and chronologically explained in the drug stage hypothesis. The drug stage hypothesis shows the progression of drug use overtime. It maintains that drug use progressively begins with the use of legal drugs, then dagga smoking and eventually, the use of other illicit drugs (Morejele & Brook, 2001). As such, the next discussion will explore the prevalence and nature of adolescent's illicit drug use or abuse.

Illicit drug use

The use or abuse of illicit drugs was not a major problem before democracy in South Africa. Prior to democracy in 1994, according to Gouws et al. (2010), only a few drugs such as mandrax, cannabis and prescription drugs were predominantly available nationwide. Nonetheless, the end of apartheid has seen the increase and widespread of illicit drug use or abuse in South Africa. After 1994, South African borders were opened to a wide range of illicit drugs, drug trafficking, and trans-shipments of illegal drugs, which turned South Africa into a drug trafficking capital and dumping ground of the south (Gouws et al., 2010; Ramlagan & Peltzer, 2012).

The scourge of substance abuse and illicit drug use or abuse continues to thrive, and it is demolishing many communities, families, and individuals in South Africa, especially the youth or adolescents (Gouws et al., 2010). This scourge, simultaneously enhance or goes together with crime, poverty, unemployment, reduced productivity, dysfunctional family life, political instability, the escalation of chronic diseases such as AIDS, cancer and TB, injury and premature or untimely death (Parry et al., 2004; Ramlagan & Peltzer, 2012). Furthermore, the scourge is detrimental to countries' annual GDP. According to Ramlagan and Peltzer (2012), the ailing use of narcotic drugs in 1997 was estimated to have cost countries between 0.5% and 1.3% worth of their annual GDP. In South Africa, the GDP amounted to an estimated total cost between R2.4 and R6.3 billion.

Adolescents' involvement in drugs, according to Morojele et al. (2006), has remarkably been on the rise in recent years. For instance, a 2003 survey revealed that about 45% of high school learners experimented with drugs in Cape Town, and about 32% were addicted or "hooked", that is, they continued to use drugs (Gouws et al., 2010). In addition, a study by Plüddemann et al., (2008) indicated an increasing demand for the treatment of heroin dependence in urban areas, particularly to Cape Town and Gauteng. All these point out to the adversities related to, or caused by illicit drug use or abuse.

The scourge of illicit drug use or abuse has been well articulated above, mostly in its negative forms. However, illicit drug use is also associated to adaptive behaviour, especially by adolescents who perceive it as a means to better negotiate their ever changing environment and life circumstances (Madu & Matla, 2003; Essau, 2004). Furthermore, illicit drug use was also linked to pleasurable consciousness states, heightened attention, and status (Morejele et al., 2006). Although, illicit drug use maybe adaptive and hold positive benefits to a certain extent, drug use or abuse still remains a problem behaviour, especially for adolescents.

The risk factors responsible for illicit drug use or abuse are different and circumstantial depending on the context in question. That is, studies have proved that psychosocial risk factors accountable for the onset of drug use fall within these domains: intrapersonal, family, peers, socio-cultural, environmental, and legal drug use (Flisher et al., 1993d; Morejele & Brook, 2001).

The complex interaction amongst these domains is crucial in influencing drug use or abuse. For instance, a qualitative study by Morejele et al. (2006) reported that adolescents held the community's tolerance accountable for the widespread sales of drugs and drug use in their neighbourhoods. However, peer pressure, modelling of parent's behaviour and accessibility were not considered precursors for illicit drug use in a qualitative study among adolescents (Morejele & Brook, 2001). The drug use problem can still be attributed to poor behaviour control (intrapersonal). Poor behaviour control is another risk factor indicated by Timmermans et al. (2008), who found a correlation between poor behaviour control, adolescent aggression, and substance use. This means that the lack of proper behaviour control from adolescents will result in illicit drug use or abuse.

Over the years, the age of onset or initiation for illicit drug use has declined drastically. A study by Ramlagan and Peltzer (2012) revealed that the age of initiation for drug use is a matter of grave concern because it is decreasing. About 80% of adolescents would have experimented with drugs by the time they reach matric in high school, and of these drug experimenters, 15% of them will be addicted (Gouws et al., 2010). Thus most are likely to carry their habit of drug use or abuse to university and in later stages of life.

The decline in the age of onset for drugs, on the contrary, indicates an increase for illicit drug use for adolescents (Parry et al., 2004). More adolescents, according to Gouws et al. (2010), are increasingly becoming involved in the usage of a wide range of illegal drugs (that is, ecstasy, methamphetamine, dagga, cocaine and mandrax), including alcohol. Ample findings of research concludes that illicit drug use is a major problem facing many adolescents the world over and locally (Kalichman et al., 2006; Morejele et al., 2006; Nielsen, 1996; Lloyd, 1985; Plüddemann et al., 2008; Ramlagan & Peltzer, 2012; Umeh, 2009; Wild et al., 2004).

As indicated above that many adolescents are faced with the problem of illicit drug use, it is important to explore the mean age and age of onset thereof. To demonstrate, a study of 239 heroin users by Plüddemann et al. (2008) shows that the age of onset of heroin ranged from 12 years to 29 years, with the mean age of 20.5 years. In their study, Madu and Matla (2003) found the mean age of 14.9 years (SD =1.77) for drug initiation. Therefore, it is apparent that the usage of illicit drugs peaks during late adolescent stage.

This was also true for a study by Wild et al. (2004), who confirm that drug use peaks within adolescent stage, especially amongst males. A study of 239 heroin users by Plüddemann et al. (2008) had 79% males and 21% females of heroin users. A study by Kavas (2009) on illicit drugs also proved that more males engage in illicit drug use than their female counterparts.

The breakdown of illicit drug use by race reveals a high prevalence amongst White and Coloured racial groups. For instance, a study of 239 heroin users by Plüddemann et al. (2008) had 79% male participants of which 57% were White, 35% Coloured, and 6% Blacks. It is apparent that Blacks were found to be the least racial group to use illicit drugs. Furthermore, self-esteem levels also yield different results when linked to illicit drug use. For example, illicit drug use was significantly related to low self-esteem (Kavas, 2009). Thus individuals with a low self-esteem were more likely to engage in illicit drug use. In addition, family self-esteem has been found to be an influential factor for adolescent's illicit drug use (Wild et al., 2004). Overall, illicit drug use amongst adolescents is caused by poor level of self-esteem, and places many adolescents at even greater risks.

2.4. Demographics and Risk-taking Behaviour

Adolescent risk-taking behaviour is complex and can be attributed to multiple determinants or etiological factors. For instance, it can be determined by some of these factors among others: age, family integration, neighbourhood or environment, school performance, race, socio-economic status, peers, and self-esteem (Booyens, Beukman, & Bezuidenhout, 2010). As such, this section will add on what has already been discussed about adolescent risk-taking behaviour by focusing mainly on demographic variables like race, socio-economic status and environment.

Risk engagements among adolescents appears to be scattered according to each race depending on the type of risk. For example, the breakdown of illicit drug use by race reveals that a higher proportion of White and Coloured adolescents consume such drugs (Plüddemann et al, 2008). A study by Panday et al. (2003) has also noted differences in cigarette smoking across racial groups in South Africa. The study found a higher proportion of cigarette smokers among Coloureds and a lower proportion among Blacks. Therefore, it is inconclusive to state in general that one racial group is more prone to risk-taking behaviour unless it is limited to specific risk behaviour. For example, it can be said that Coloureds tend to engage more in risk taking behaviour than other race for illicit drug use and cigarette smoking as noted in this paragraph.

Adolescents' socio-economic status is another crucial factor amongst risk-taking behaviour determining factors. As such, inferences between low socio-economic status, and high socio-economic status will be used to articulate how socio-economic status links to risk-taking behaviour. Adolescents from a low socio-economic status are often linked to risk-taking behaviour and other offensive behaviours than their counterparts from a high socio-economic status. For example, most adolescent sexual offenders were found amongst those from a low socio-economic class than those from a high socio-economic class (Booyens et. al, 2010).

Economic strain and relative deprivation are globally accepted as factors leading to criminal activities and other forms of risk behaviour (Maree, 2010). This suggests that poverty stricken families and adolescents from such families are prone to risk-taking behaviour. In addition, these families are usually incomplete (like, child headed, or single parent families), overcrowded, and parental supervision is limited or non-existent (Maree 2010). According to Booyens et al. (2010), these adolescents' home life is characterized by violence, physical abuse, neglect and other abnormal activities. As such, many adolescents from such families often resort to substance use and criminal activities in or to cope with such harsh realities, especially if the parents are also substance users.

The environment or neighbourhood also plays a role in adolescent risk-taking behaviour. According to Booyens et al. (2010) a neighbourhood stricken by poverty, unemployment is likely to produce a children who are prone to engaging in risk-taking behaviour. A study by Maree (2010) revealed that most children (including adolescents) in South Africa are raised in communities infested with violence, vandalism, sexual abuse, crime, substance abuse and stiff competition to survive. As such, all these negative behaviours from the neighbourhood are often internalized by adolescents and accepted as normal. For example, adolescents from a community with less moral values are likely to smoke cigarette, abuse alcohol, and engage in sex with more than one partner.

It is evident from the above that demographics such as socio-economic status, race, and neighbourhood play a vital role in influencing adolescent risk taking behaviour. Although it may not be specific and in detailed, certain risk behaviour and risk-taking can be prevalent in each race, whilst it was clear that a negative environment and low socio-economic status does influence adolescents engage in risk behaviour. Arguably, the risk profile of adolescent risky behaviour is affected by race, socio-economic status, and type of environment.

2.5. Adolescent's help-seeking behaviour

Considering the substantial amount of information reported in the previous sections about adolescents' risk-taking behaviour (or health-endangering behaviours), it is therefore necessary to look at the patterns, approaches, and attitudes that adolescents have towards help-seeking behaviour. This section will briefly elaborate on issues, concerns, and developments regarding adolescents' help-seeking behaviour.

2.5.1. Help-seeking behaviour: brief background and definition

Help-seeking behaviour is a significant subset amongst coping behaviours which are essential for mental health and overall well-being of individuals (Van der Riet & Knoetze, 2004). Despite the presence of literature on how adolescents cope, adolescents' help-seeking behaviour has been relatively ignored with regards to research (Pisani et al., 2012; Wilson & Dean, 2001).

According to Kuhl et al. (1997, in Van der Riet & Knoetze, 2004), help-seeking behaviour is a complex and poorly understood type of behaviour which is non-homogeneous across populations because it is influenced by various factors like demographics, psychosocial circumstances, and cultural aspects. For the sake of comprehension, it is imperative to give a definition of help-seeking behaviour prior to any discussions that will delve into adolescent help-seeking behaviour.

Help-seeking behaviour refers to the deliberate behaviour and process of seeking help from others, and making attempts to find resources to assist with problem solving or concerns (Rickwood, Deane, Wilson, & Ciarrochi, 2005; Van der Riet & Knoetze, 2005). It is also about attaining help in terms of understanding, advice, information, treatment, and general support in response to a problem or worrying experience through conversations with other people (Rickwood et al., 2005). According to Pisani et al. (2012), help-seeking behaviour is described as any form of disclosing troubling issues to an adult or other people, and perceiving oneself as seeking help. Therefore, viewing oneself as a help seeker, and the disclosure thereof, together with the acknowledgement of difficulties is crucial for acquiring help or prompting help-seeking behaviour.

Health information seeking is another terminology which is similar to or part of help-seeking behaviour because it refers to the search for and acceptance of messages that help in reducing uncertainty regarding health status, and in constructing a psychosocial, cognitive and personal sense of health (Cotten & Gupta, 2004). Nonetheless, in this study, adolescents who make efforts and intend to seek help according to the above definition or guidelines will be described as displaying help-seeking behaviour.

Overall, it has been noted that help-seeking behaviour also takes the form of coping, which is largely dependent on other people. This is a justification of its fundamental principles which are based on social relationships and interpersonal skills (Rickwood et al., 2005). It is important to note that help is sought from people who are either professionals or non-professionals (Van der Riet & Knoetze, 2004), since help-seeking behaviour is predominantly depended on other people (thus, social relations and interpersonal skills are vital). The following section will discuss in detail various sources of help that are accessible to adolescents.

2.5.2. Adolescent's help-seeking behaviour: patterns and attitudes

Help is usually sought for, due to diverse issues and reasons which are not limited to, but are inclusive of academic, psychosocial and medical problems (Van der Riet & Knoetze, 2004). Since there are diverse reasons for seeking help, there are also various sources of help which are often sought from diverse sources that are different in their level of formality (Rickwood et al., 2005). Young people with long-term conditions, for instance, usually display a tendency of choosing different sources for different types of information and help (Gray et al., 2004). That is, they would prefer to acquire medical facts from health professionals, but would consider friends or someone else with the same condition for psycho-social information, support and further help.

Help-seeking behaviour is mediated by many variables that influence an individuals' choice to consider seeking help. These factors range from gender, peers, culture, socio-economic status, education or awareness, trust, attitude towards help-seeking or the helper, competency of the helper, relationship with the helper, education or knowledge, expectations, and personality traits of the help-seeker or the helper (Cotten & Gupta, 2004; Gray, Klein, Noyce, Sesselberg, & Cantrill, 2004; Van der Riet & Knoetze, 2004; Wilson & Dean, 2001).

These variables can either promote or discourage the initiation or choice towards help-seeking behaviour. If adolescents perceive negative judgement either from peers or the helper, then they will be discouraged to seek for help. To illustrate, some of these variables are explained below.

A qualitative study on attitude showed that most students who were encouraged to seek for help and viewed it as crucial in the process of finding solutions, were those who upheld a positive or good attitude towards help-seeking (Wilson & Deane, 2001). The opposite is true, those with a negative attitude were less likely to seek for help and upheld bad attitude. Similarly, adolescents with extremely lower intention of seeking for help and poor acceptance of professional help were those who upheld a negative attitude towards help-seeking, professional help, and thought themselves to be self-reliant (Pisani et al., 2012).

Help-seeking behaviour is also regulated by relationships with the helper. In a study by Rickwood et al. (2005), students reported that their relationship with any potential help source is essential. They indicated that the success of the helping process was largely dependent on the establishment of a strong positive relationship. This relationship should be non-judgemental, warm, and emotionally safe (Pisani et al., 2012). That is, a helper who is aloof and judgemental will negatively affect help-seeking behaviour of a particular individual, who is likely to be left hurt and hopeless.

Gender differences have also been noted in some studies regarding male and female propensity to seek for help when faced with various problems. Help-seeking behaviour has been found to be associated with more females than males (Van der Riet & Knoetze, 2004). For example, a study on adolescent sexual health revealed that young women were willing to consult an adult (that is, their mothers), whilst young men preferred to ask their peers over an adult or someone with some expertise (Gray et al., 2004). This pattern of behaviour indicates that male adolescents have a tendency not to seek help, and if they do, they are more likely to seek inappropriate help from limited sources or people who are not competent enough or qualify to help them out, like their peers. However, there is hope for males and most adolescents with online and more anonymous means of help (Kanuga & Rosenfeld, 2004)

A pilot study by Schreiber and Aartun (2011) on online counselling and support service via mobile technology (that is, cell phones, tablet, smart phones and chat facilities) was conducted at the University of Western Cape, South Africa. Their pilot study showed the usefulness of mobile technology counselling and support services; and an increased number of male students who sought for help through this mechanism of counselling and support services as compared to conventional face-to-face counselling sessions which had fewer male participants. However, their study did not find any differences in terms of issues raised and presenting problems between mobile technology and conventional face-to-face counselling as sources of help.

Extending from the previous paragraph on mobile technology, it is worth noting that online help is another alternative to the conventional face-to-face counselling. According to Gray et al. (2004), the internet has recently been endorsed and included amongst sources of health information for adolescents. They also indicated a rapid growth for the use of the internet as a medium of help. The internet pulls together both lay and professional material for help (Cotten & Gupta (2004), which could be a problem for those who do not have a better approach to sieve their intake of information. However, most adolescent treat the information obtained online with great caution (Gray et al., 2004; Kanuga & Rosenfeld, 2004; Pisani et al., 2012).

Anonymity is one of the main reasons why adolescents prefer to seek for online help (Kanuga & Rosenfeld, 2004; Schreiber & Aartun, 2011). A study on the internet usage for acquiring help or health information among adolescent aged 15 – 24 years showed that 75% of the adolescents have sought help online, whilst 90% only reported ever using the internet for general purposes (Gray et al., 2004). The anonymity helps adolescent to avoid the embarrassment and shame that is expected or likely to be encountered when seeking help from people or help that requires human contact (Wilson & Deane, 2001).

Overall, it is evident that embracing help-seeking behaviour when faced with challenges is essential for relief, reduction of stress and the provision of solutions. Wilson and Dean (2001) emphasize the need to intentionally seek for relevant and appropriate help, rather than seeking for any help that is available. For example, they have found that appropriate help seeking provides a generic protection for any suicidal pathways than any other form of help-seeking behaviour. Therefore, programs that facilitate appropriate help seeking by lowering barriers might bring troubled youth to treatment at more amenable stages of their problems. These should include cell-phone and online sources of help.

2.6. Theoretical framework

Adolescent's stage is predominantly characterized by decision making (Gouws et al., 2010; Feldman & Elliot, 1990; Umeh, 2009). For instance, adolescents have to choose friends, careers, what to eat, how to behave, a place to relax or have fun, to mention but a few examples. Therefore, looking at models and theories for decision making would be necessary, and they form the core discussion of this section. Decision theory consists of a large variety of mathematical methods for modelling human behaviour in the presence of uncertainty (Aliev, Pedrycz, & Huseynov, 2012; Mowrer & Davidson). Subjective expected utility and the Prospect theory are examples of the decision theory. These theories will be discussed in the following sections.

2.6.1. Subjective expected utility (SEU)

The subjective expected utility theory (SEU) is one of the models for decision making which was coined in the 1950's by Leonard Jimmie Savage (Aliev et al., 2012; Mishra & Fiddick, 2012; Umeh, 2009). Kahneman and Tversky (1975) state that, the analysis of decision making under risk has predominantly been determined and influenced by the subjective expected utility theory. They further describe that this theory has been largely accepted as a core normative model of rational choice, and has also been used as a descriptive model of economic behaviour. Since the mid-20th century, according to Mishra and Fiddick (2012), the subjective expected utility theory has been the governing framework for the comprehension of decision making in behavioural sciences.

In all decisions, the subjective expected utility theory argues that people aim to maximize utility, which is (utility) described as a measure of happiness, gratification, or fulfilment resulting from a certain type of behaviour (Aliev et al., 2012 ;). Thus, individuals take into considerations the outcome for each option when faced with a situation that requires one to choose between two or more options (Umeh, 2009).

These outcomes are on the premise of perceived costs and benefits, where the decision maker has to weigh the options before making any decision in order to make a choice that will yield maximum utility. According to Aliev et al. (2012), subjective expected theory is all about making rational decisions. This theory is concerned and focused with identifying the most optimal choice in a given situation. In this context, rationality refers to decision making that is geared towards obtaining the best favourable outcomes, whereby individuals revise their beliefs about the accuracy of the probable outcome and by assigning consistent subjective probabilities to each outcome (Mishra & Fiddick, 2012). Therefore, thorough knowledge and confidence on the probable outcome is essential in order to make a rational choice that yields maximum utility.

The emphasis placed on the value attached to the outcome (that is, whether it is desired or despised) and its probability of materializing (is the outcome guaranteed or it can only happen by chance), remain essential for the subjective expected utility theory (Umeh, 2009). For instance, an individual might chose to engage in a health endangering behaviour because the negative consequences might either happen by chance or after a long period of time, like smoking a cigarette. Hence, the decision to smoke cigarette is made because it has a desired outcome which outweighs the probability of lung cancer or other related illnesses in the long run. Furthermore, many similarities and basic principles can be drawn between the subjective expected utility theory and the definition of risk-taking behaviour. These similarities are predominantly on weighing between loss and gain or costs and benefits, whilst the difference is that risk-taking behaviour predominantly yields losses and negative consequences as outcomes. A definition by Byrnes et al. (2004) refers to risk-taking behaviour as the execution of options which usually bring about negative consequences as an outcome.

The subjective expected utility theory has its own shortcomings like any other theory; these shortcomings are briefly explained as the paragraph unfolds. This theory does not take into consideration individuals' attitude towards certainty and uncertainty because some individuals are more likely to take preference in guaranteed outcomes than unguaranteed outcomes regardless of the value attached to the outcome (Mishra & Fiddick, 2012; Umeh, 2009). For example, individuals often choose an option that entails more risks than the other choice because they are guaranteed immediate gratification.

The predominant view of decision making as an intellectual exercise by the subjective expected utility theory, presents another shortcoming becoming because it is not cognizant of emotions (Umeh, 2009). Therefore, its application to adolescents could be difficult because adolescents are largely characterized as emotional and are not yet intellectually matured in this transitional stage (Aliev et al., 2012; Umeh 2009). Furthermore, the models presented in this theory do not necessarily correspond to the computational abilities of human beings, irrespective of its strong analytical power and well composition (Kahneman & Tversky, 1975). Studies have shown, according to Aliev et al. (2012), that people have a tendency to systematically violate the fundamental assumptions of the subjective expected utility theory such as independency, probabilistic beliefs, descriptive and procedural invariance.

In an attempt to close these gaps and to exterminate limitations brought about the subjective expected utility theory as mentioned above; a more advanced, applicable and relevant theory is introduced, which is called the Prospect theory. This theory will consolidate for shortcomings of the subjective expected utility theory, and it is discussed in detail in the next section.

2.6.2. Prospect theory

The prospect theory has been coined and developed by Kahneman and Tversky in the 70's, with the primary intention of addressing deficiencies or shortcomings posed by the Subjective expected utility theory and to provide an alternative theory or approach (Kahneman & Tversky, 1975; Mowrer & Davison, 2011). This theory offers a clear account on risky decision making, such as decisions which are often labelled as unreasonable or irrational, stupid and risky (Umeh, 2009).

For example, it would seem unreasonable for individuals to continue to consume alcohol despite its grim effect on one's health. The prospect theory, according to Aliev et al. (2012), is one of the most well-known theories and it is successful because it incorporates psychological traits which contribute to the formation of human behaviour.

The utility model of the prospect theory was constructed from a number of discovered features of human behaviour in decision making by Kahneman and Tversky (1975). These features are cognizant of the fact that: people make decisions based on gains and losses instead of the final wealth; humans have stronger reactions to losses as opposed to gains; probability weights rather than objective probabilities are usually used when making decisions under risk (Aliev et al., 2012). The decision process within this theory can be described in two segments: framing and evaluation (Umeh, 2009). These two processes will unfold in the next sections.

2.6.2.1. Framing

The prospect theory was developed with the intent of explaining framing effects in decision making, as one of its mandate (Kahneman & Tversky, 1975; Mishra & Fiddick, 2012). It suggests that people display framing effects because the rate of increase in utility resulting from gains is sharply diminishing: for example, gaining R100 is subjectively more valuable if one had no money at first than if one had R10, 000; however, with regards to losses, the utility shrinks more quickly, thus people will engage in risky behaviour in order to prevent any further experience of loss (Mishra & Fiddick, 2012). According to the prospect theory, decision making under risk may be perceived as a choice between gambles or prospects (Kahneman & Tversky, 1975). Whereby, low probability events are highly considered and high probability events are less considered in simple gambles.

On one hand, people have a tendency of estimating that they stand a good chance of experiencing a low probability event than they actually are, like winning the lottery. On the other hand, it means that they will estimate that they do not stand a good chance of experiencing the high probability event, like using drugs and loss of health (Mowrer & Davidson, 2011). As such, the manner in which options appear or are presented to an individual (that is, *framed*: gain or loss, high or low probability) determine or influence the type and nature of a decision that will be taken by the individual, the choice can either be regarded as rational or irrational (Umeh, 2009).

More often, accepted options are those that are framed or conceived in a positive rather than a negative manner (Kahneman & Tversky, 1975; Umeh, 2009).

Framing can take various forms, like decision makers often consider things that are more important to them, prior to any acceptance of behaviour or available options (Umeh, 2009). These important things according to Byrnes (2002 in Umeh, 2009) are: maintaining a good health, securing a more reliable and permanent Job, and maintaining good relations with family and friends. These various and random forms of framing aid with the simplification of the problem at hand because people work out which outcomes are gains from those that are losses in relation to a certain point of reference, and focus on unique distinguishing factors from other alternatives (Kahneman & Tversky, 1975). Overall, the advantages of framing are described by Umeh (2009) as follows:

- Framing enables the decision maker to identify feasible options, in cognizant of contextual factors that influence and shapes the choices at the disposal of an individual, that is, political, social, environmental, cultural, intellectual and economic consideration.
- Framing assists individuals to simplify otherwise complex information which yields an easy and manageable decision making process.

2.6.2.2. Evaluation

There are similarities to what transpires within the Subjective expected utility theory and the evaluation phase of the prospect theory, except that the evaluation phase considers the attitude of individuals towards certainty and uncertainty of outcomes in order to consolidate for the value assigned to each possible outcome (Umeh, 2009). The prospect theory presumes that people's decisions are to a large extent influenced by the subjective values they place on outcomes (Mowrer & Davidson, 2011).

These subjective values induce a change that brings imbalance in the perception of equivalent events; hence losses are easily accepted more than gains. Moreover, people have the tendency to assign more weight or emphasis on certain or guaranteed outcomes than in uncertain or probable outcomes (Umeh, 2009).

According to Umeh (2009), people have serious challenges dealing with extreme probabilities because the idea of chance is often despised. Therefore, events that are most likely to occur are viewed as certain or guaranteed, while those events that are less likely to occur are considered as impossible (Mowrer & Davidson, 2011).

This distortion lends a hand in why people engage in unreasonable or pointless risk-taking behaviour. However, what is gain for one person might not necessarily mean the same for the other; it can either be seen as loss or nothing for the other (Umeh, 2009). That is why adolescents often view their risk-taking behaviour as fun or not problematic instead of seeing it as risky. For example, engaging in unsafe sex practice would mean love for young lovers, whilst an adult couple could see it as a serious health risk.

It is imperative to note that the concept of certainty is fundamental in understanding the prospect theory, because people's different attitudes and attributes about certainty and uncertainty can distort an otherwise rational decision making process (Kahneman & Tversky, 1975; Mishra & Fiddick, 2012). For example, the certainty of achieving a heroic status and respect amongst peers is what drives many adolescents to take part in train surfing despite how dangerous it may be, because they believe that there is a low probability of them being hurt in the process.

The inclination for certainty is mediated by either bad or good circumstances (Kahneman & Tyversky, 1975; Umeh, 2009). That is, people are generally more cautious (risk averse) in good situations but take more risk (risk seeking) in bad situations (Mowrer & Davidson, 2011). In simple terms, people have a propensity to keep what they have (or what is guaranteed) than to take risks for something that is not guaranteed (Umeh, 2009). For example, teenagers choose to experiment with smoking, drugs and alcohol because they are guaranteed a sense of belonging amongst their peers and a satisfied curiosity. On the contrary, the merits of not smoking because of notably reduced susceptibility to long-term health is usually ignored, despite its vital role in maintaining ones' good health because it is seen as vague and uncertain.

When dealing with losses, people have a tendency to accept or choose uncertain loss over a certain one, even if the certain loss is of minimal significance (Mishra & Fiddick, 2012; Umeh, 2009). That is, people are inclined to take more risks (that is, they are risk seeking) when faced with situations that poses potential losses. For example, people tend to engage in unprotected sexual practices because they think the risks or chances of contracting STI's and unplanned pregnancy seem uncertain. On the contrary, the risks of using contraception and practicing safe sex usually comes with guaranteed embarrassment, interruption, sense of distrust, and reduced spontaneity irrespective of how less disastrous it may be; it seems almost guaranteed to occur. This certainty is what drives many adolescent to engage in unsafe sex practice because they also reason that the consequences might not happen to them and will take their chances than being embarrassed (that is, they prefer the uncertain outcomes).

2.6.3. Applications and limitations of the prospect theory

The prospect theory is instrumental in understanding diverse unusual decisions, like adolescent' engagement in risk-taking behaviour, irrespective of their knowledge of the consequences that go along with those risk behaviours (Kahneman & Tversky, 1975; Umeh, 2009). This theory, also offers an alternative to the subjective expected utility theory through its emphasis on decision weights or value, and its predictions about risk aversion or risk seeking in situations that require gain-loss judgments (McDermot, 1998 in Umeh, 2009). Furthermore, the prospect theory can help predict health decisions in a wide range of scenarios, because decisions about health behaviour usually consist of a choice between alternatives which poses different degrees about the certainty of outcomes.

The prospect theory might be advanced and better than the Subjective expected utility theory, but it still has some of its own shortcomings. These limitations are explained as the paragraphs unfold. The prospect theory largely relates to economists and mathematicians than to psychologists because it is predominantly a mathematical model (Umeh, 2009). This leaves many questions around the effectiveness of using mathematical models to address puzzle of human behaviour because the nature of human decision making is often broad and not logical as in mathematical models. According to Umeh (2009), peoples' decision making in the real world can be blurry, impulsive, and unpredictable and without clear justifications; and mathematical models don not have room for such variety and uncertainty.

The assumption of some form of intellectual maturity and ability from the decision maker by the prospect theory creates a loop-hole which discriminates or exclude children, adolescents, uneducated individuals and mentally challenged individuals because their cognitive proficiency is lacking and not yet fully developed (Umeh, 2009). That is, this theory expects or requires the decision maker to be able to comprehend abstractions like gain, loss, and probability. Furthermore, the prospect theory does not offer a comprehensible validation of why reference points are privileged in decision making and why they are constructed; although it acknowledges that reference points are derived from an individual's current condition, and that they can change on the basis of expectations or biases of the decision maker (Kahneman & Tversky, 1975; Mishra & Fiddick, 2012). Lastly, similar to the subjective expected utility theory, the prospect theory does not adequately give an explanation on the pronounced and direct effect emotions have on peoples' decision making (Umeh, 2009).

2.6.4. Self-esteem and theoretical framework

Taking into account what has been discussed about both self-esteem and theoretical frameworks used in this study, inferences will be derived to show how these concepts link. Firstly, whilst adolescent stage is mainly about decision making (Gouws et al, 2010; Umeh, 2009), it is important to note that self-esteem plays a key role in determining human behaviour (Kavas, 2009). This can be deduced to indicate that decision making within adolescent stage is intertwined with self-esteem as far as any behaviour is concerned. The behaviour can either be risky or healthy. In other words, risk-taking is mediated by both self-esteem and the proposed theoretical approaches to this study.

Espousing from above, similarities can be drawn between self-esteem and either the prospect theory or utility theory, since all these concepts are limited to individuals perceptions, especially with regard to gains and feeling happy. For example, a decision to engage in risk behaviour could be a result of peer pressure whereby an adolescent will enjoy the comfort and feelings of happiness when accepted or praised by peers. The acceptance by peers has to do with self-worth and that is the gain in terms of the theoretical frameworks.

In addition, the theories suggest that such choice depends on how the individual frames the situations, and similarly, self-esteem will drive the adolescent to act on the basis of how he or she believes will be comfortable when deciding to engage in any behaviour, especially if such behaviour will positively enhance how he or she is viewed by his or her peers. In essence, both self-esteem and the proposed theoretical approaches to this study are somehow complementary and function similarly. As such, it makes it more suitable in this study to understand risk-taking behaviour, especially how it relates to self-esteem.

2.7. Rationale

Adolescent risk behaviours have been the centre of attraction and focus area of study in scientific research and for most researchers in recent times (Wild et al., 2004). This focus and interest is largely brought by the intense risk that is posed to the individual or society when one engages in risk-taking behaviour (Essau, 2004). In addition to such a fascination, the current researcher's passion, and interest in understanding the lifestyle of adolescents or university students, and challenges or consequences thereof motivated for this study. Other several reasons convinced and inspired the current researcher to carry out such a study; these reasons are explained as follows:

- Most adolescents' morbidity and mortality is usually caused by behaviours that can be ignored and prevented as opposed to natural causes and diseases (Flisher et al., 1993a; Wild et al., 2004). Thus most adolescents'- deaths are caused by external factors such as car accidents, suicide, and violent behaviours.
- Adolescent stage is a period characterized by elevated potential for risk-taking behaviour as compared to other developmental periods (Essau, 2004). That is, adolescents are inclined to engage in (or exposed to) risk-taking behaviour due to their inherent nature and lifestyle of exploring, experimenting and being rebellious (Flisher et al., 1993a).
- Adolescents are influenced by social factors in the process of developing their identity (Wild et al., 2004). For instance, adolescents often ignore and neglect possible threats that can place them in compromising risky situations by trying to gain acceptance in a particular group (Essau, 2004).

- The effects of certain adolescent risk-taking behaviours usually take a long time to manifest, and some may show in adulthood (Flisher et al., 1993). Thus many adolescents are encouraged to engage in risk-taking behaviour, especially if the consequences may manifest at a later stage. Furthermore, such behaviours also have the propensity to predict other risk-taking behaviours in adulthood (Wild et al., 2004).
- Other risk-taking behaviours often extend beyond adolescent stage, and continue into adulthood despite being initiated during this stage (Essau, 2004). Addictive behaviours like smoking and alcohol abuse are prominent examples. Therefore, adolescent stage is very crucial for promoting healthy-behaviours because preventative measures are more likely to be successful and reduces futures problems of the similar nature (Flisher et al., 1993a).
- A substantial number of studies have shown that most risk-taking behaviours usually comorbid other disorders or risk problems (Essau, 2004). For example, the co-occurrence of substance abuse and violent behaviour.
- Self-esteem is proven to be a vital personality trait in determining human behaviour (Kavas, 2009). Moreover, adolescent stage has been found to be a significant developmental period for the formation of self-esteem (Impett et al., 2008). This would suggest that self-esteem cannot be ruled out when attempting to understand adolescent risk-taking behaviour.
- Several studies suggest an imperative link between self-esteem and risk-taking behaviour (Impett et al., 2008; Kavas, 2009). For example, alcohol abuse has been linked to low self-esteem among university students. Thus self-esteem might serve as a protective factor for adolescents' risk behaviours (Baumeister et al., 2003).

Chapter 3: Methodology

This chapter outlines the methods to answering key research questions of this study. The aims and hypotheses of this study will be presented in this chapter. The research design, sampling, data collection, and instruments used, including their reliability and validity, will also form part of this chapter.

3.1. Aims and hypotheses

3.1.1. Aims and research questions

The main aim of this study was to investigate the relationship between self-esteem and risk-taking behaviour amongst a population of late adolescent university students studying at the University of KwaZulu-Natal, Pietermaritzburg Campus, in South Africa. This study sought to determine if self-esteem correlates with adolescent risk-taking behaviour. That is, to possibly determine any relations between the two variables, for example, if an increase in self-esteem could lead to a decrease in risk-taking behaviour, and vice versa.

In a nutshell, taking into account the prevalence of risk-taking behaviour among adolescents and many various possible causes thereof (Flisher et al., 1993a; Trzesniewski et al., 2006), this study was guided by the following primary question: *What is the relationship between self-esteem and risk-taking behaviour among late adolescents attending university?* In addition, given the influence of demographic variables of adolescents who engage in risk-taking, behaviour the following question was also asked:

- What is the demographic profile of adolescents who engage in risk-taking behaviour at the University of KwaZulu-Natal?

3.1.2. Hypotheses

For the sake of direction and making sense of the research question, hypotheses had to be introduced. This helped to achieve the aims of this study and to answer research questions that go along with it. Therefore, the following hypotheses, generated from the literature review, were formulated to address the research aims and questions outlined above:

3.1.2. 1. Hypothesis 1 (Ho)

The use of hypotheses is fundamental in most research or studies, in particular to the null hypothesis. The null hypothesis plays a major role in testing the research hypothesis and it provides a starting point for any statistical test (Howell, 2002). In addition, Fisher (in Howell, 2002, p. 95) who coined this term at first, argues philosophically that people can never prove something to be true but they can prove something to be false. In cognisance of this, the following null hypothesis was put in place in order to test the hypotheses of the aims of this study: There is no significant correlation (or relationship) between self-esteem (SE) and risk-taking behaviour (RTB). This indicates the lack of relationship between the two variables studied.

3.1.2.2. Hypothesis 2 (H1)

The alternative research hypothesis is as follows: There is a significant relationship between self-esteem and risk-taking behaviour. This means that self-esteem and risk-taking behaviour have a significant correlation.

3.2. Research design

3.2.1. Cross-sectional Research Design

A cross-sectional study was employed in the current study. A cross-sectional study refers to a research design that makes use of different groups or between-subjects approach (Goodwin, 2002). For instance, this design allowed for comparisons across five different age groups at a time when investigating risk-taking behaviour patterns; whereas a longitudinal study would have focused on studying one age group over a long period of time in order to determine risk-taking behaviour patterns of that particular age group. The cross-sectional study is time efficient as opposed to the longitudinal study, which usually lasts for years (Goodwin, 2002). Therefore, it was relevant and fitting for the current study to make use of the cross-sectional study because of the need to complete this research project within a shorter period.

A prominent short-coming regarding the cross-sectional study is its failure to make predictions of changes that occur over a period of time (Flisher et al., 1993a). For instance, a cross-sectional study would confirm that the individual engages in risk-taking behaviour but would not predict a change in that behaviour overtime. Another short-coming pertains to its inability to acknowledge variables that influence the outcomes of a study (That is, culture, environment, and age groups) when comparing different groups (Goodwin, 2002). Given such limitations, interpretations of results should be carefully made.

3.2.2. Correlation-based Research

This current study is also a correlation-based research study. A correlation study is defined as an approach that focuses on the investigation of relationships between two or more variables (Aron & Aron, 1997; Goodwin, 2002; Hofstee, 2010). Self-esteem and risk-taking behaviour are variables under investigation in this study. A distinction between positive and negative correlation is essential for describing the nature of a relationship (Aron & Aron, 1997).

A positive correlation is where high scores go together with high scores, and then low with low and moderate with moderate scores. For example, a positive correlation between alcohol and unsafe sex is that, the higher the consumption of alcohol the higher the chance of unsafe sex practice. On the contrary, a negative correlation would mean that high scores will go together with low scores and that the variables will usually go in opposite directions (Goodwin, 2002). For example, a correlation study between self-esteem and risk-taking behaviour would indicate that the higher the self-esteem, the lower the level of risk-taking behaviour. However, it is also possible for two variables to have no relations with each other, whereby those variables are independent of each other (Aron & Aron, 1997).

It is important to note that correlation does not necessarily mean or refers to causation, and most researchers warn against such conclusions (Denscombe, 2007; Gravetter & Forzano, 2009; Hofstee, 2010). According to Goodwin (2002), a finding that there is a correlation between two variables does not imply that one variable is causing the other variable to occur because the presence of a third variable could be accountable for the correlation found between those two variables.

For instance, a correlation between self-esteem and risk-taking behaviour would not necessarily mean that having a poor self-esteem causes risk-taking behaviour because other excluded factors like environment, peer pressure and personality could also be responsible for risk-taking behaviour. Therefore, precautions need to be taken when interpreting findings for a correlation-based study, especially with regards to generalisations and over-simplification of complex relationship (Hofstee, 2010). Correlation-based studies are significant for behaviour predictions, for laying foundations for further and future research, and they are usually implemented in cases where experimental surveys prove to be limited in terms of application due to ethical and practical concerns (Goodwin, 2002; Hofstee, 2010).

3.2.3. Quantitative Research

This study further employed the quantitative research method because of its correlational nature. Quantitative research is a systematic and objective method which makes use of numerical data from selected subgroups of a population in order to generalise the findings to the population that is being studied (K. Maree, 2010; Goodwin, 2002). This method is designed to examine (or correlate) variables (that is, self-esteem & risk-taking behaviour) which usually differ in quantity, like size, duration and amount (Gravetter & Forzano, 2009).

The advantages of using a quantitative study are many. Below is a list of a few of these advantages as described by Denscombe (2007):

- A quantitative study is associated with large-scale studies where the results can be generalised to the population being studied. Also, large amount of data is quickly analysed given proper plans.
- It provides a concrete foundation for description and analysis, since it is largely associated with analysis.
- Tables and charts employed by this method provide a concise manner of organising data and communicating the findings to others in a less complex way than in qualitative research.
- It provides “objective” data due to the detachment of the researcher within the actual study and analysis.

It is important to note that this method is not based on the premise that theory and methods will emerge during the course of the research as in qualitative research, because quantitative research is more specific and predetermined (Gravetter & Forzano, 2009). On the one hand, it is an advantage to use a specific and predetermined method because it gives a study a sense of direction and helps keep focus. On the other hand, it limits the inclusion of other relevant and necessary considerations once started (Stevenson, 2001).

3.3. Instruments

The questionnaire of this study comprised of items from two separate questionnaires (Appendix A): (1) the Rosenberg Self-esteem Scale (RSS); and (2) a Risk-Taking Behaviour Assessment Scale extracted from the work done by Flisher et al. (1993a). The Rosenberg Self-esteem scale comes from the work of Morris Rosenberg (1965), which he developed using a sample that consisted of 5,024 high school learners (or adolescents) which were randomly chosen from ten different schools in New York. His research drew conclusions which state that self-esteem is either a negative or positive attitude we have about ourselves that is influenced by family, society, culture and relationships. The scale is primarily used to assess global self-esteem, and it is the most commonly used and best known measuring tool for self-esteem (Baumeister et al., 2003; Kavas, 2009).

The Rosenberg Self-esteem scale consists of a ten item likert-type scale with items answered on a four point scale: from strongly agree to strongly disagree. Items no 3, 5, 8, 9, and 10 are reversed in valence, whereas, item no 1, 2, 4, 6, and 7 were not reversed in valence (Appendix A). This scale has a score range of 0 – 30 after calculating the sum of all ten items, whereby the highest score is indicative of a higher self-esteem. Thus, any score below 15 would suggest a low self-esteem. Examples of items contained in it are: I take a positive attitude towards myself; On the whole, I am satisfied with myself. This scale has a strong validity that has been proven through a wide range of sample groups of people, and it has been used as a model for designing other self-esteem scales (Baumeister et al., 2003). Overall, this scale is highly reliable, valid, and has been used by many researchers (Baumeister et al., 2003; Kavas, 2009; Peltzer et al., 2001).

The second set of the questionnaire was derived from the work of Flisher and his colleagues (1993), in order to assess adolescent risk-taking behaviour. The original risk-taking behaviour scale consisted of demographic questions, and three other parts. *Part 1* focused on unintentional and intentional violent behaviour, and suicidal behaviour; *Part 2* focused on substance use and abuse (like alcohol consumption, cannabis, solvent and injectable drugs); *Part 3* dealt with aspects of sexual behaviour and prevention against disease or pregnancy.

The adapted risk-taking behaviour scale for the current study consisted of two parts, which were mainly taken from part 2 and 3 of the original risk-taking behaviour questionnaire by Flisher et al. (1993a). Therefore, all items pertaining to risk-taking behaviour that focused on sexual-risk, alcohol, cigarette and drugs were included.

Items pertaining to demographic information such as age, gender, race, and level of study were also included in this study's questionnaire. However, no personal identifying information such as student number, identification number (ID), home or postal addresses, cell phone numbers, and names were required. According to their risk-taking behaviour questionnaire, Flisher et al. (1993a) mentioned that the questionnaire was a self-administered instrument, which required a "yes" or "no" responses. Moreover, they intentionally focused on observable risk-taking behaviour rather than focusing on items that explored attitudes and beliefs on risk-taking behaviour because such items are usually infused with cultural influences and biases, of which they wanted to eliminate or minimize by excluding those type of questions or items. As a result, the current study also focused on observable risk-taking behaviour and excluded questions on attitudes and beliefs. Questions included in the current study's risk-taking behaviour questionnaire are outlined Section A of the final questionnaire in Appendix A.

The validity was assessed by using a factitious drug called "derbisol". Participants were asked if they have ever used this factitious drug. All participants who responded "yes" to using this factitious drug were discarded from the study (Flisher et al., 1993a). However, no participant in this current study reported ever using this hypothetical drug. Furthermore, this instrument has been subject to extensive and several pilot studies, whereby clarity-seeking interviews were also done, mainly to boost the validity of the questionnaire and to make it more efficient (Flisher et al., 1993a; Wild et al., 2004).

Similar versions of this instrument or risk-taking questionnaire have been utilized in other school-based epidemiological studies in South Africa (Flisher, 1998). Therefore, it is beyond doubt that this questionnaire has a strong validity.

Stevenson (2001) contends that effective questionnaires are usually short and straight to the point. Hence, the study's final scale was succinct, and it only required a short time to administer, which boosted the present study's data collection process because respondents remained interested when completing the questionnaire, unlike long questionnaires that prove to be tedious and produce less interested participants who fabricate responses.

Although the current study's questionnaire reliability and validity were well established, further reliability analysis for this questionnaire was run through the IBM SPSS Statistics 21 in order to specifically confirm their reliability for this study, since it was administered on a different sample. Prior to any reports on the reliability scores for this study, it is important to briefly describe what reliability analysis is all about.

Reliability analysis is all about the same scale yielding similar results when administered again under similar conditions, and it is necessary because most scales (or observation methods) usually lack consistency, thus affecting the usefulness of the findings generated by that measure (Goodwin, 2002). The Cronbach's coefficient alpha was used to determine the scales' reliability instead of split-half and test-retest reliability measures. The Cronbach's coefficient alpha was chosen because it is widely used by researchers than the other measures of reliability, which are usually laborious and difficult to administer (Aron & Aron, 1997). For a significant and useful scale, the Cronbach's alpha should be at least 0.7 or greater (Finchilescu, 2010).

Both scales for this study were proven to be reliable through reliability analysis. The reliability score for the Rosenberg Self-esteem scale was found to be reliable (Cronbach's alpha = 0.750), indicating that the scale is useful and produced trustworthy findings. Although the Risk-taking Behaviour scale had a Cronbach's alpha value of 0.614, it was also declared reliable because the reliability value of 0.65 is adequate if the scale is to be used to compare groups of people (Finchilescu, 2010), it was nearly significant due to the slight difference from the significance cut-off point.

For determining validity, content validity, criterion-related validity, and construct validity are primary aspects of validity to be examined (Finchilescu, 2010), and only the first two mentioned were relevant and considered for the current study's validity. Content validity pertains to the extent to which a test or measure accurately represents the domain of the construct being measured, and criterion-related validity refers to the extent of how a measure or test accurately predicts a criterion behaviour or outcome either in the present or future (Finchilescu, 2010; Goodwin, 2002).

The current study's questionnaire had a strong content validity because of its relatively strong face validity, and has gained approval from expert judges. Face validity (refers to the appearance and authenticity of the test or measure) and expert judges (that is, supervisor and ethics committee reviewers) are determinants of content validity (Finchilescu, 2010). For instance, it is without doubt that the current study's questionnaire measures what it is supposed to measure because the items in the questionnaire show authenticity and measure the domain's constructs under investigation (that is, self-esteem and risk-taking behaviour), and has gained approval from the ethics committee and supervisor.

3.4. Sampling

It is important to note the following considerations before providing a more detailed breakdown of the sample used in this study. First, selecting the sample size is a complex process because it depends on other factors which are often difficult to access or control; hence, it is one of the most imperative aspects for consideration when planning a sample survey (Swanepoel, Swanepoel, Van Graan, Allison & Santana, 2010). Another noteworthy consideration when selecting the sample size is that a higher accuracy demands larger sample sizes which could be more expensive and require more time (Stevenson, 2001). Lastly, despite probability sampling being a recommended and preferred method for many studies, Durrheim and Painter (2008) warn that probability samples are expensive and difficult to attain in practice. Hence, they mention how non-probability sampling is employed by the majority of studies in the social sciences and virtually in all student work as opposed to probability sampling. The sampling for the current research was mindful of the above considerations in an attempt to work with an attainable and reasonable sample size, as well as avoiding expensive costs, and being time efficient.

The present study employed a non-probability sampling method. There are various types of non-probability sampling methods which include snowball sampling, theoretical sampling, and convenience sampling (Swanepoel et al., 2010). Convenience sampling (also called accidental, available or an opportunity sample) was chosen, and used to sample participants for this study because it is time efficient and easily applicable (Denscombe, 2007; Du Ploy, 2002). Furthermore, convenience sampling is the most frequently used and suitable type of nonprobability sampling because the researcher simply requests volunteers from a group of available people, who of course have to meet the criteria or general requirements of the study (Goodwin, 2002).

There is a high probability of recruiting uninterested participants and those who do not perfectly meet the sample requirements when the sample is conveniently selected, which can further bias the findings and interfere with data analysis by affecting the total sample size of a study (Aron & Aron, 1997). However, qualifying participants for the current study were specifically determined, and recruited in accordance to the sample variables. Such a process is called purposive sampling according to Goodwin (2002). It refers to instances when convenience sampling is used with a more refined and specific details of the participants wanted for a particular study, as it was the case in this study.

Taking into account the above considerations for sampling, the current study's sample was broken down as follows: all students from different faculties, academic level, race or ethnic and language groups were eligible to take part in this study. Age was another feature for eligible participants, which comprised of 18 to 22 year old registered students at the University of KwaZulu-Natal, Pietermaritzburg Campus. The study also welcomed individuals from either sex (or gender) to take part.

3.5. Data collection procedure

Data was collected by filling in a self-administered questionnaire. Please note that the majority of the questionnaires were completed using a group administration approach. Group administration of questionnaires was considered by the researcher because of the following benefits (extracted and deduced from K. Maree & Pieterse, 2010):

- The method is relatively cheap, affordable and simple to do.
- The test administrator or researcher can check questionnaires for accuracy.
- A lot of participants can complete the questionnaires within a short space of time.

Taking into account the group administration approach, the researcher asked for permission from some of the lecturers (known to the researcher in the Department of Psychology) to administer these questionnaires a few minutes before the end of their lecture periods. The response from those lecturers was positive. Then the researcher attended the lectures to which permission to collect data was granted. Few minutes prior to the end of those lectures, the researcher was given an opportunity to explain the study and the informed consent before students could either chose to participate or not. Thereafter, the questionnaire was handed out to fitting and interested students because they had received clear and detailed instructions about taking part in the current study.

During the time of filling in of the questionnaires, the researcher was available in order to answer further clarity-seeking questions. Most respondents were able to complete and submit the questionnaire within the expected scheduled time after their lectures. However, there were a few participants who did not manage to complete the questionnaire within the expected allocated time, but they were able to complete the questionnaire at their own convenient time and returned them by placing their completed questionnaire within a box housed in the Psychology Department.

Another part of data collection was done around the campus in social places. The researcher distributed some of the questionnaires to qualifying participants to complete while they had gathered at social group settings. These social places or group settings included places like the Hexagon cafe at lunch times, and Denison Residence (in their blocks or rooms). All these are part of the University of KwaZulu-Natal, Pietermaritzburg Campus.

3.6. Sample

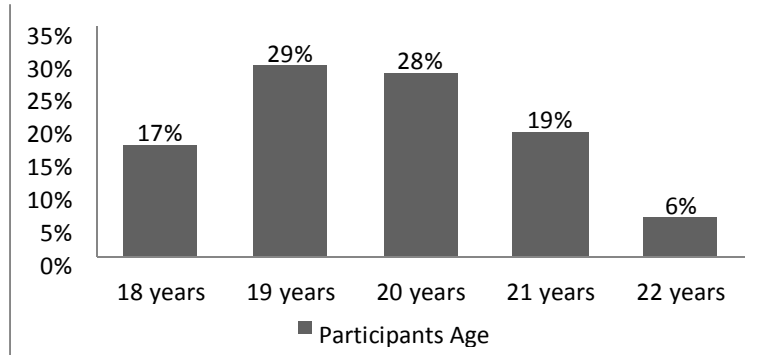
The target sample size for this study was 200 participants, which was drawn from a population of adolescent students attending at the University of KwaZulu-Natal, Pietermaritzburg Campus. The sample size was chosen to the advantage of the researcher in terms of time and feasibility. The reason for focusing on late adolescents at university was because many studies of this nature have focused more on early and middle adolescents in high schools (Baumeister et al., 2003; Flisher et al., 1993a; Trzesniewski et al., 2006; Wild et al., 2004), thus creating a knowledge gap regarding late adolescents, which the current study aims to close by shifting the focus from young adolescents to late adolescents.

All students from different races, courses or fields of study, languages, and both sexes were included in the sample. In order to consolidate for spoiled or defaulted questionnaires, about 250 questionnaires were distributed so that the targeted sample size was met. Nonetheless, many questionnaires were spoiled for various reasons, which were predominantly accounted for by incomplete questionnaires, and those who were above the required age limit. Thus, a hundred and eighty-eight (188) questionnaires were completed and comprised the final and accepted sample size of this study. The breakdown of the sample by a means of demographics was as follows:

3.6.1. Age

The age range of participants was from 18 to 22 years old. The most common age was 19 years old, with a standard deviation of 1.15 years. A breakdown of the sample in terms of age is shown below in Figure 1. Two participants did not record (or specify) their age.

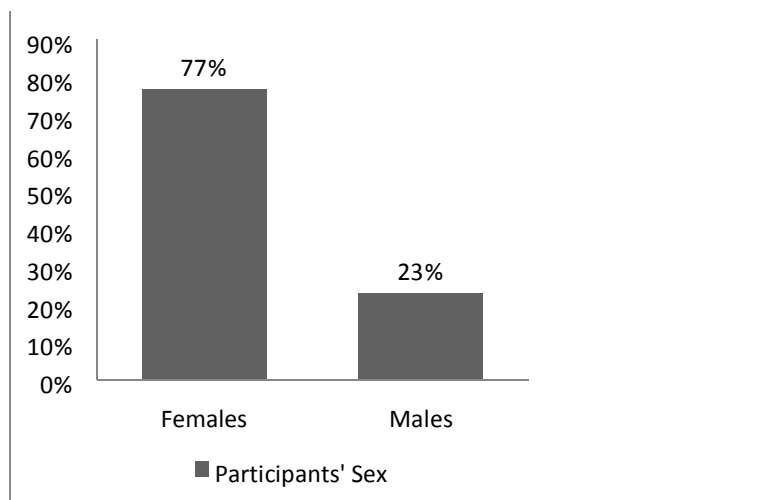
Figure 1 Sample Distribution Bar Graph in Terms of Age



3.6.2. Sex

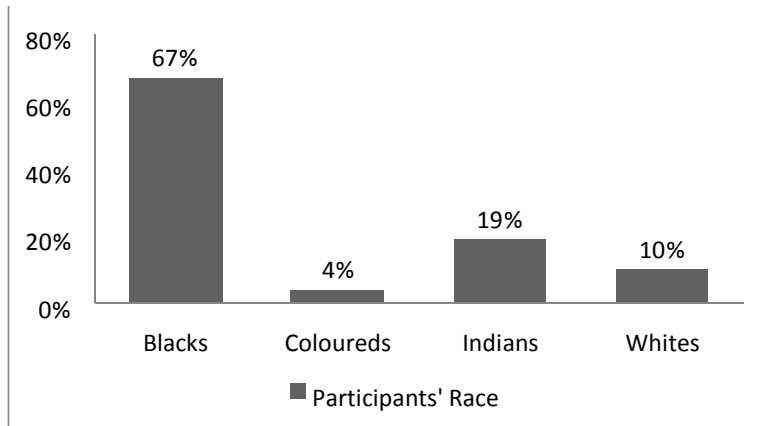
The gender distribution for participants was as follows: female respondents comprised of 145 (77.1%) participants of the sample, whilst males had a representative of 43 (22.9%) participants (see Figure 2 below). Overall, there were more females than males who took part in this study.

Figure 2. Sample Distribution Bar Graph in Terms of Sex



3.6.3. Race

Figure 3. Sample Distribution Bar Graph in Terms of Race

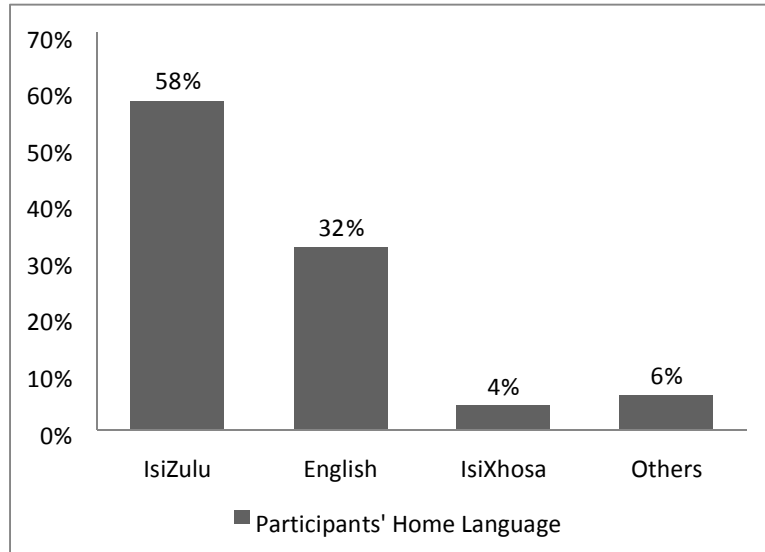


The participation representation for race ranged from 4% to 67%. Blacks (67%) were the most represented race in this study. It is evident that more blacks than any other race took part in this study. The sample breakdown for race is shown in detailed in Figure 3 above. One participant did not indicate his or her race.

3.6.4. Home language

The participation by home language ranged from 6% to 58%. The majority of the participants were IsiZulu speakers with 109 (58%) participants. All other languages together were minimally represented. One participant did not indicate his or her home language. Nonetheless, home language was excluded from further analysis in this study, because most languages were minimally represented. A detailed breakdown of the sample by home language is presented in Figure 4 below.

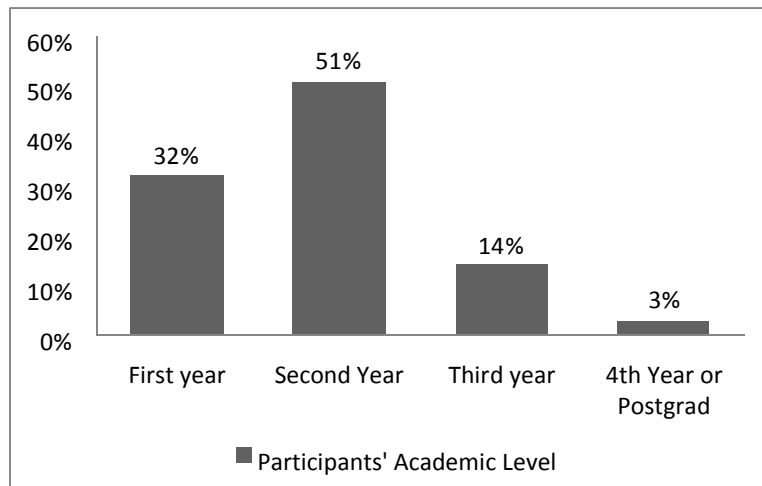
Figure 4. Sample Distribution Bar Graph in Terms of Home language



3.6.5. Academic year

Participation breakdown in terms of academic year ranged from 3% to 51%. The majority of the participants were in their 2nd year of study with 96 (51.1%) participants. These were inclusive of all students from any faculty or degree offered at the university as indicated in this study's sampling. A detailed breakdown of the sample by academic level is presented in Figure 5 below.

Figure 5. Sample Distribution Bar Graph in Terms of Academic level (or year of study)



3.7. Data analysis

3.7.1. Primary Tools of Analysis

Data was computed and analyzed using the Statistical Packages for Social Sciences (IBM SPSS Statistics 21) as a means of analysis, and to calculate the correlation coefficients between self-esteem and risk-taking behaviour. Statistical packages help the researcher to group and regroup data, code and recode data, and in undertaking statistical analysis (Denscombe, 2007). Technological advancements have brought about many significant changes, especially in how things are done and processed at present.

In the past, most statistical analyses were manually done with the help of hand-held calculators and text book guidelines, but today most statistical analyses are done through statistical software packages on computers (Howell, 2002). Examples of these software packages are BMDP series, SAS®, SPSS™, and SYSTAT. These are highly reliable and are comprehensible for use than past conventional methods. One or more of these software packages are available and easily accessible in any college or university (Howell, 2002).

The SPSS™ carries virtually every analysis, with the inclusion of correlation studies (Denscombe, 2007; Howell, 2002). Hence it was more relevant, applicable and feasible to this study. Nevertheless, Denscombe (2007) warns that the researcher can be overwhelmed by these statistical software packages at times, and in order to avoid such a pitfall the researcher asked assistance from a qualified research psychologist who knows how to operate the IBM SPSS statistics 21. This has increased the accuracy and validity of the results generated in the current study.

Descriptive statistics were used in the process of data analysis. Descriptive statistics help the researcher to organize data, summarize findings, display the evidence, describe the profile of findings in a less complicated manner, and to explore associations (Denscombe, 2007; Stevenson, 2001). These descriptive statistics consist of the mean, range of scores, standard deviation, skeweness and kurtosis (Foxcroft & Roodt, 2009; Pallant, 2005; Swanepoel et al., 2010).

For instance, they were used to determine the mean age of risk-taking behaviour, to determine which gender engages more in risk-taking behaviour, or to give an indication of percentages for both self-esteem and risk-taking behaviour scaled scores. Moreover, descriptive statistics serve as a fundamental basis prior to any or major assessment techniques (like Chisquare or ANOVA), by ensuring that necessary assumptions to proceed with analysis are met (Pallant, 2005).

The Chi-square test as part of the non-parametric tests was used to analyze associations between variables. This test was employed because the data did not meet the stringent assumptions for parametric tests (like t-test, ANOVA), and because it is useful for studies with a small sample size as well as being compatible for data that is measured on both nominal or categorical and ordinal or ranked scales as this data was (Pallant, 2005).

The Chi-square test was run through the IBM SPSS statistics 21 in order to determine significant associations between variables, which requires a P value of less or equal to 0.05 ($P \leq 0.05$) in order to indicate and confirm significant correlations between variables (Aron & Aron, 1997; Goodwin, 2002; Pallant, 2005). That is, the correlation between variables as confirmed by a P value of less or equal to 0.05, meant that the difference between those variables were less likely to be accounted for by chance or sampling error.

Adjusted residual analysis was done through the IBM SPSS 21. Adjusted residuals refer to a residual that is adjusted to have an approximate standard normal distribution (Lachenicht, 2010). These residuals are similarly interpreted as z-scores, and they are effective for isolating sources of associations in order to determine the chance of occurrence (Lachenicht, 2010). When applied for example, adjusted residual shows the levels (either greater or less) of chance pertaining to occurrences for relations between two variables and are useful for making comparisons.

3.7.2. Detailed and Specific Analysis Procedures for Risk-taking Behaviour

For an easy data analysis, different variables were broken down into two or more categories and given new names in such a way that the results or findings are easily understood and clearly depicted, including the interpretations thereof. Furthermore, formulas and calculations for scaled scores were also explained in this section for the sake of an easy understanding of the results and discussion of this study. The afore mentioned are thoroughly elaborated in the following paragraphs below.

The risk-taking behaviour scale was answered with a “yes” or “no” response and the scale score was calculated by adding all the number of “yes” and “no” for each participant for all ten risk-factors. These risk-factors comprised of the following items from the study’s questionnaire (see Appendix A): 7, 8, 9, 10, 11, 12, 14, 15, 16, and 18, were selected from the risk-taking behaviour scale. Therefore, a scale score of zero and 10 represented minimal and maximum risk-taking behaviour respectively, whereby a “yes” response was equivalent to a score of 1 and a “no” response was equivalent to a score of 0.

Low risk-taking behaviour and high risk-taking behaviour categories were also created in order to determine the levels of risk engagement from the total risk-taking behaviour scaled score discussed above. Participants who have ever engaged in any form of risk-taking behaviour were classified as engaging in low risk-taking behaviour, which comprised of participants who had a score range of 0 to 4, whilst a score range of 5 – 10 represented those classified as engaging in high risk-taking behaviour.

Another risk-taking behaviour score which comprised of only five items (item no’s: 7,8,9,11, & 18) from the study’s questionnaire was computed and calculated in order to report on the most common risk-taking behaviour engagement among adolescents. This common risk-taking behaviour score was derived from the above mentioned ten item risk-taking behaviour scale. However, this one only focused on five common risk-factors.

The sub-scale score of 0 and 5 respectively, represented minimal and maximum risk-taking behaviour after adding all the number of “yes” and “no” for all five Items. Whereby, a “yes” response was equivalent to a score of 1 and a “no” response was equivalent to a score of 0.

Similar to the risk-taking behaviour scale, a distinction between low risk-taking behaviour and high risk-taking behaviour was also made with a purpose of determining the levels of risk engagement from the total score of the most common risk-taking behaviours (that is, under the common risk-taking behaviour sub-scale). That is, low risk-taking behaviour was indicated by participants who had obtained a score range of 0 – 2, indicating risk engagement amongst the most common risk-factors. Conversely, those with high risk-taking behaviour were indicated by a score range of 3 – 5.

Several studies have documented that alcohol consumption, cigarette smoking, dagga smoking, and unsafe sex practices are the most common types of risk-taking behaviour (Essau, 2004; Leather, 2009; Timmermans et al., 2007; Umeh, 2009). Hence, these common risk-factors were the area of focus in the common risk-taking behaviour sub-scale. Descriptive statistics was run to determine the frequencies and breakdown of scores for both risk-taking behaviour scales discussed above.

A distinction between regular risk-takers and either experimenters or occasional risk-takers amongst those who reported engagement in risk-taking behaviour was also done in order to differentiate participants who often engage in risk-taking behaviour from those who do not. Specific items from the adapted risk-taking behaviour scale were used to make such estimation through the Chi-square analysis and descriptive statistics from the questionnaire. That is, regular risk-takers were identified as all participants who gave a “yes” response for items: 7b, 8b, 9b, 18d, and 18e (see Appendix A), whilst, those who gave a “no” response were classified as either experimenters or occasional risk-takers.

Another criterion to distinguish between regular risk-takers and either experimenters or occasional risk-takers were done by determining the number of days of risk engagement within a month amongst those who reported risk-taking behaviour (note: sexual-risk behaviour was measured in number of weeks, item 18c). Thus, risk-takers were classified as all participants who reported (at least) five or more days of risk engagement (two or more weeks was considered for sexual-risk behaviour). Experimenters or occasional risk-takers were classified as all participants who reported less than five days of risk engagement within a month (less than two weeks was considered for sexual-risk behaviour).

Furthermore, by measuring the quantity of used or consumed type of risk-factors (that is, cigarette and alcohol in items 7d & 8d), regular risk-takers were considered to have reported a minimum usage of five or more quantities of risk-taking behaviour, and those who reported a maximum usage of four or less were categorized as experimenters or occasional risk-takers.

For sexual-risk behaviours, levels of sexual-risk taking (that is, low sexual-risk takers and high sexual-risk takers) were introduced in order to establish a distinction between participants who are more exposed to sexual-risk behaviours (or sexually active) and those who are less or not exposed to sexual-risk behaviours. Low sexual-risk takers were associated with safe sex practice, and unsafe sex practice was linked to high sexual-risk takers. This distinction was measured by looking at item 18b, 18c, 18d, 18e, and 18f (see Appendix A), and by focusing on those who have reported to be sexually active or have ever had sex in the past year. Item 18f was primarily used to determine which type of prevention method is most preferred and used by adolescents in order to prevent against both or either pregnancy or disease (STI's & HIV/AIDS) by looking at the percentage or frequency scores thereof.

Safe sex practice was indicated by participants who reported having had sex with one or two different partners in the past year (item 18b); participants who reported less than three weeks during which they last had a sexual intercourse (item 18c); participants who have known their partners for more than seven days during the last occasion of their sexual intercourse (item 18d); and those who reported to have used some means of prevention (against pregnancy or disease) with their partner on the last occasion they had sexual intercourse (18e).

Conversely, unsafe sex practice was determined by participants who had reported having had sex with three or more different partners in the past year (item 18b); participants who reported more than two weeks during which they last had a sexual intercourse (item 18c); those who knew their partners for less than seven days during the last occasion of their sexual intercourse (item 18d); and those who have reported no use of some means of prevention (either against pregnancy or disease) with their partner on the last occasion they had sexual intercourse (item 18e). For the purpose of this study, sexual intercourse refers to intimate contact with someone of the opposite sex during which the penis enters the vagina (Flisher et al., 1993a).

3.7.3. Detailed and Specific Analysis Procedures for Self-esteem

Stipulated guidelines for scoring were directly applied from the original self-esteem scale (that is, the Rosenberg Self-esteem Scale, RSS). The guidelines were followed in order to calculate the self-esteem score before classifying self-esteem into two categories. The scale ranged from a score of 0 - 30, and it was broken down to two types of self-esteem levels, being low self-esteem and high self-esteem. All reverse scored items were accurately coded and calculated. Self-esteem scores were calculated as follows as depicted in Table 2 below:

Table 2 Self-esteem scoring guidelines

Not Reversed Scored	Reversed in Valence
<i>Items 1,2,4,6, & 7</i>	<i>Items 3,5,8,9, & 10</i>
Strongly agree = 3	Strongly agree = 0
Agree = 2	Agree = 1
Disagree = 1	Disagree = 2
Strongly disagree = 0	Strongly disagree = 3

Low self-esteem and high self-esteem categories were formulated in order to determine the level of self-esteem amongst participants. Low self-esteem ranged from a score of 0 – 15, and high self-esteem ranged from a score of 16 – 30. For instance, a participant was considered to have a low self-esteem if his or her score was 10 from the Rosenberg Self-esteem Scale final score.

3.8. Ethical Considerations

Ethical consideration is one of the most fundamental aspects not to be ignored in any research or study because research ethics protect the welfare of individuals or participants in any study (Wassenaar, 2006). According to Streubert and Carpenters (1999), whenever human beings are the focus of the investigation, ethical implications of what one proposes to do must be carefully considered.

Strydom (2002; 63) as cited by K. Maree (2010) emphasize that: “anyone involved in research needs to be aware of the general agreements about what is proper and improper in scientific research”. Cognisant of the above furnished reasons pertaining to ethics, the researcher ensured that high and proper ethical standards were adhered to throughout the process of this research project.

Ethical clearance for this study was obtained from the Faculty of Higher degrees ethics committee at the University of KwaZulu-Natal, Pietermaritzburg Campus. A copy of this ethical clearance letter is attached in Appendix B. Moreover, the implementation and sustaining of ethical standards and procedures throughout this research were achieved by careful administration and continuous practice of the following: informed consent, confidentiality, justice, beneficence and non-maleficence. By so doing the welfare of the participants was protected.

Firstly, Informed consent is a major ethical principle in research (Wassenaar, 2006). It is about ensuring that human participants are furnished with complete information about the research and their roles before agreeing to take part in the research (Gravetter & Forzano, 2009). As such, informed consent was obtained from all participants before participating in this research, and they were informed about the research details. Nevertheless, details of the psychological measures and hypotheses of the study were not disclosed in order to prevent or limit any possible expectancy effect, and for the purposes of maintaining reliability and validity. Overall, all participants had to sign a written consent form (see Appendix A) prior to any engagements or participation to this study.

All participants were over the age of consent (18 years) and there was no need to ask their parents or guardians to consent on their behalf. Students or participants who did not sign the written consent form were excluded from taking part in this research project. In other words, the exclusion criterion for not taking part within this study was refusal to sign the informed consent form. No names or any personally identifying information were required in the consent and assessment forms. In this way, anonymity was kept throughout the entire process as a means of attaining and sustaining confidentiality. No one from the university nor their parents or friends has had nor will have access to the collected data.

The completed questionnaires will only be accessible to the researcher and his supervisor. All the information collected has been kept by the researcher in a safe place and it will be destroyed after a period of five years.

This study was not designed to produce any direct monetary, or otherwise similar benefit to the participants (that is, money, extra marks or in other forms). As such, participants were informed their rights, voluntary participation, right to stop at any time they wanted to (that is, they could withdraw from participation whenever they wanted without complications, consequences or harm befalling them) and all other matters that concerned their safety and welfare.

Finally, ethical research ensures that justice (requiring that researchers must treat research participants with fairness and equity throughout the entire research); beneficence and nonmaleficence are core guiding principles for the research (Wassenaar, 2006). Hence, the researcher was sensitive to potential harm (physically or emotionally), relative risks and was responsible enough to avoid harm befalling participants either directly or indirectly by treating all participants with dignity and respect. As such, the researcher was sure about the absence of any foreseeable future risks, dangers or harm (directly or indirectly) for taking part in this study. Nonetheless, debriefing and counselling services were on stand-by in case of any emergency or unforeseen circumstance. Although debriefing and counselling were on stand-by, participants did not utilize these services after taking part in this study. Indicating that indeed this was a safe study.

3.9. Anticipated problems

Stevenson (2001) mentions that participants are usually not motivated to participate, they are easily distracted and impatient in cases where the items are irrelevant and too long. As such participants tend to fulfil instead of being genuine when filling in the questionnaire. It is evident that lack of interest and honesty could have been challenges for participants in this study. In particular, the lack of honesty being regarded as a major problem. In order to address these challenges the following was considered: *firstly*, the researcher adopted a relevant and fairly short questionnaire which should have taken about ten minutes or less to complete depending on the reading and responding pace of the respondents.

This encouraged the participants and kept their interest to participate in this study. *Lastly*, the problem regarding participants not being honest when filling in the questionnaire was addressed by the use of a hypothetical drug called “derbisol” as it has already been explained under the Instruments sub-section in this chapter. No participants reported using this drug, proving honesty in their responses. The next section will give an outline for the findings in this study.

Chapter 4: Results

This chapter presents the results of the current study. Statistically significant results or key findings will be mainly reported in this chapter. Interpretation of these findings and their implications will follow in the discussion chapter. The first part of this chapter will present the results on risk-taking behaviour followed by results on self-esteem, and it will end by looking at the correlation between risk-taking behaviour and self-esteem. Presentations by means of graphs and tables will be used to give a better and clearer presentation of the results. It is important to note that some total scores for the total sample size and percentages will differ at times due to missing data where participants did not indicate their responses for some items, and such participants' questionnaires were included and recorded as missing data. The following symbols will be utilized throughout the presentation in this chapter.

Table 3 Definitions of used statistical symbols

<i>Symbol</i>	<i>Definition</i>
N	Sample size
Tn	Total sample size
μ	Population mean
σ_x	Standard deviation
%	Percentage

4.1. Risk-taking behaviour

4.1.1. Summary results for levels of risk-taking behaviour

It is imperative to note that the risk-taking behaviour scale was calculated using a total of five most common risk-taking behaviours. These are alcohol consumption, cigarette smoking, dagga smoking, sexual risk-behaviour, and glue sniffing. The remainder of other risky behaviours like cocaine, ecstasy, and other illegal drugs were excluded from the results of this study because very few participants reported using them. Only three participants indicated ever using one of these substances.

Of the total participants, 81% (153) reported to have ever engaged in risk-taking behaviour. This means that 19% (35) of the total sample reported not to have ever engaged in risk-taking behaviour. A distinction between low- and high risk-taking behaviours of the total sample was also made as stipulated in the methodology chapter. That is, within the total score of the most common risk-taking behaviours a score range of 0 – 2 (or 0 – 4 as represented in Figure 6, including those with no risk) indicated low risk-taking behaviour and a score range of 3 – 5 (or 5 – 10 as represented in Figure 6) indicated those with high risk-taking behaviour.

As such, when the risk-taking behaviours were grouped to reflect the level of involvement, 64% ($n = 120$, $\mu = 19\%$, $\sigma_x = 14\%$) of the participants were classified as engaging in low risk-taking behaviour. The other 36% (68) were classified as engaging in high risk-taking behaviours. The distribution of the score was slightly skewed to the left (depicting a positively skewed distribution), which indicates that the majority of the participants reported lower than average risk-taking behaviour (see Figure 6 below).

Figure 6 A Histogram depicting Risk-taking Behaviour Score Distribution

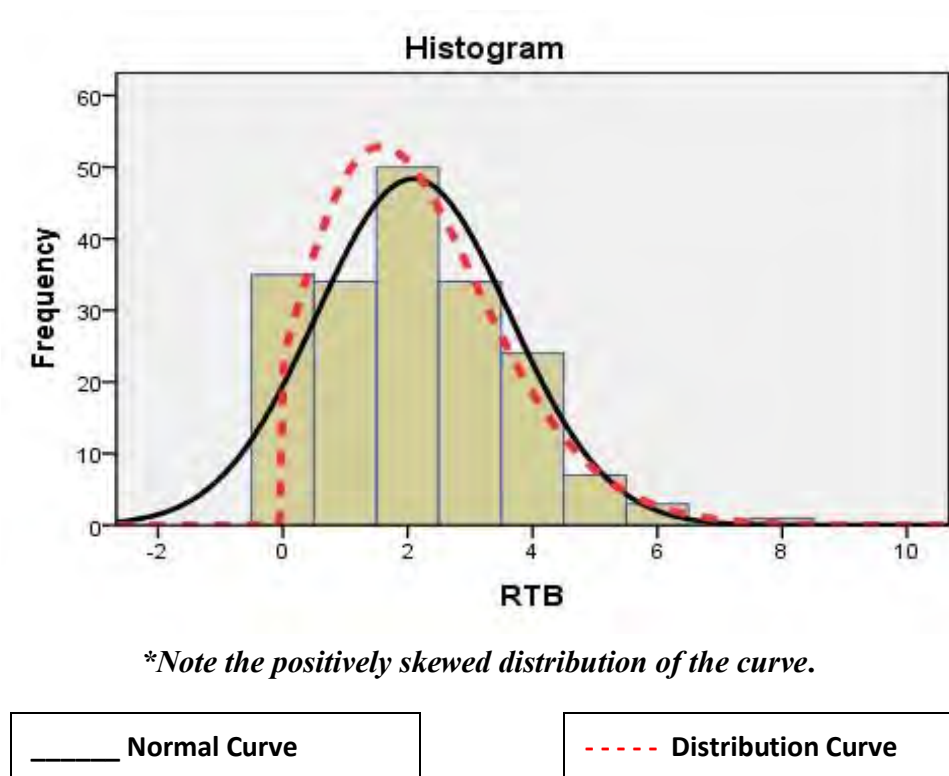


Table 4.1 below shows the number of participants by gender who engaged in high levels of risk-taking behaviour from the total sample. A high number of males (51%) than females (32%) engaged in high levels of risk-taking behaviours. The gender differences were found to be significant at $P = 0.02$. A significant analysis test done on other variables such as race, age and level of study did not yield any statistical significant results ($p > 0.05$). Differences between them could however be accounted for by standard error of measurement or chance.

Table 4.1 Relationship between total (categorized) risk-taking behaviour & gender

Risk type	Females		Males	
	N	%	N	%
<i>Low risk-taking behaviour</i>	99	68%	21	49%
<i>High risk-taking behaviour</i>	46	32%	22	51%
Total	145	100%	43	100%

*** $P = 0.02$ statistically significant.**

4.1.2. Patterns of Risk-taking behaviour

For each risk-taking behaviour, results were presented to show prevalence and variables pertinent to reflecting a particular pattern of involvement. Prior to independent discussion of these risk-taking behaviours, a general or summary of reported risk-taking behaviour will be briefly discussed. In order to present a quick and succinct picture of the general involvement in various risk-taking behaviours, Table 4.2 below provides a general prevalence summary for each risk studied. The average age of onset (or initiation) for each risk factor is also included. The table also shows that 11.6 years was the least average age of onset for engagement in risk-taking behaviour. In particular, this minimum age was recorded under glue sniffing. Moreover, Table 4.2 also shows that the total mean age of onset for all combined risk-taking behaviour was 15.3 years old.

Table 4.2 General prevalence summary

Risk factor	Reported usage	N =188	Percentage	Mean age of risk onset
Alcohol consumption	Drinkers	135	72%	15.6years
	Non- drinkers	53	28%	
Cigarette	Smokers	71	38%	15.7 years
	Non- smokers	117	62%	
Dagga	Smokers	58	31%	16.7 years
	Non-smokers	130	69%	
Glue sniffing	Sniffers	20	10%	11.6 years
	Non- sniffers	168	89%	
Sexual intercourse	Sexually active	95	51%	16.9 years
	Sexually inactive	93	49%	
Total Mean age	15.3 years			

(a) Alcohol consumption

Table 4.3 below indicates that 72% participants of the total sample have ever consumed alcohol, of which 52 % were found to have ever used alcohol other than few sips in the past year. Two participants did not give their responses for alcohol consumption in past year. In the past month, 34% of those who have ever consumed alcohol indicated drinking alcohol for more than five days. These are participants who were classified as regular alcohol consumers.

The remaining 66% of the participants were classified as either experimenters or occasional alcohol consumers (see Table 4.3 below). These are participants who indicated drinking alcohol for less than five days in the past month. Ten participants did not indicate responses for the number of days they at least had one drink in the past month. Of those who have ever consumed alcohol, 25% were classified as heavy drinkers. These are participants who indicated to have had five or more drinks on more than five occasions in the past two weeks. See Table 4.3 below for a detailed distribution of scores for alcohol consumption.

Table 4.3 Alcohol consumption patterns

<i>Alcohol consumption</i>		
<i>Question</i>	<i>N</i>	<i>%</i>
Have you ever used alcohol (including beer and wine), other than few sips?		
Yes	135	72%
No	53	28%
In the past year, did you use alcohol other than few sips?		
Yes	96	52%
No	37	20%
During the past month, on how many days did you have at least one drink of alcohol?		
4 days or less	57	66%
5 days or more	29	34%
During the past 14 days, on how many days did you have 5 or more drinks on one occasion?		
4 drinks or less	35	75%
5 drinks or more	12	25%

In terms of age, the highest number of those who have ever consumed alcohol, were 20 year old participants (83%), and were subsequently followed by 22 year olds (73%), 21 year olds (69%), and then 19 year olds (67%). The least of these, were 18 year olds (62%). Ten years was indicated to be as the minimum age of onset for alcohol consumption, and the average age of onset was 15.6 years.

An analysis within gender found that a higher proportion of male (81%) participants indicated alcohol consumption than their female (69%) counterparts. When the results were analysed according to race, the majority of Coloured participants (87%) were found to be more alcohol consumers than any other race, followed by Indian (80%) and Black (69%) participants. White (67%) participants were the least consumers of alcohol. In terms of academic level, 79% of 2nd year students were found to be more alcohol consumers than any other level of study amongst those who indicated to have ever consumed alcohol. In comparison to other levels of study amongst those who have ever consumed alcohol, 4th year or postgraduate students (40%) were the least. However, these detailed findings were not significant ($P > 0.05$) when tested for significance levels (see Appendix C for all tables on relations between demographic and alcohol).

(b) Cigarette smoking

Table 4.4 below shows that 38% participants of the total sample have ever smoked a whole cigarette in their lifetime. Of those who have ever smoked a cigarette, 23% were found to have smoked a whole cigarette in the past year. About 52% of the participants, according to table 4.4 below, were classified as regular smokers since they were found to have smoked cigarettes for more than five days in the past month. Less than half of the participants (48%) who indicated to have ever smoked a cigarette were classified as either experimenters or occasional cigarette smokers because they were found to have smoked cigarettes for less than five days in the past month. Eleven participants did not provide responses regarding the number of days they smoked cigarette in the past month.

During the past month, 44% amongst those who have ever smoked a cigarette indicated to be smoking five or more cigarettes per day, and these were categorised as heavy cigarette smokers, on the one hand. On the other hand, more than half (56%) were classified as occasional smokers. These are participants who indicated smoking less than 5 cigarettes per day.

Table 4.4 cigarette smoking patterns

<i>Cigarette smoking</i>		
<i>Question</i>	<i>N</i>	<i>%</i>
Have you ever smoked a whole cigarette?		
Yes	71	38%
No	117	62%
In the past year, have you smoked a whole cigarette?		
Yes	42	23%
No	29	15%
During the past month, on how many days did you smoke cigarettes?		
4 days or less	16	48%
5 days or more	17	52%
During the past month, on the days you smoked, how many cigarettes did you smoke per day?		
4 cigarettes or less	19	56%
5 cigarettes or more	15	44%

The age of onset for cigarette smoking was 10 years, with 15.7 years being the mean age of cigarette smoking initiation. The majority (50%) of cigarette smokers were 21 years old, whilst the least were 19 year old (31%) participants. An analysis within gender revealed that a higher proportion of male participants (46%) than female participants (35%) have ever smoked a cigarette.

In terms of academic level, the majority (50%) of cigarette smokers were in their third year level of study at university, while the least (20%) smokers were in their 4th year and postgraduate levels. However, none of these variables presented above were found to be statistically significant ($p > 0.05$), after a test of significance was done.

A significant relationship was, however, found between cigarette smoking and race ($P = .001$), see Table 4.5 below. The results show that more Indians (63%) were likely to smoke cigarette than any other racial group. Both White and Coloured participants had 50% of cigarette smokers each, with Blacks (29%) being the least cigarette smokers in this sample. According to a comparison by adjusted residuals, Indians were approximately 3 times more likely to smoke cigarettes than any other racial group, and Blacks were 3.8 times less likely to smoke cigarettes.

Table 4.5 Relationship between cigarette smoking and race

<i>Cigarette smoking</i>			
Race	Tn	Yes	No
<i>Blacks</i>	126 (100%)	36 (29%)	90 (71%)
<i>Coloureds</i>	08 (100%)	04 (50%)	04(50%)
<i>Indians</i>	35 (100%)	22 (63%)	13 (37%)
<i>Whites</i>	18 (100%)	09(50%)	09 (50%)
Total	187 (100%)	71 (38%)	116 (29%)

*One participant did not indicate his/her racial group.

* $P = .001$ for race **significant**. **Adjusted residuals:** blacks -3.8 & Indians 3.4

(c) Dagga smoking

Table 4.6 below shows that 31% participants of the total sample have ever smoked dagga on its own in their life time. Of those participants who indicated to have ever smoked dagga on its own, 20% were classified as current and regular dagga smokers since they indicated dagga smoking in the past year. When assessed for the frequency of dagga smoking, 11% of the participants amongst those who have ever smoked dagga were classified as either experimenters or occasional dagga smokers because they did not indicate dagga smoking in the past year (refer to Table 4.6). Dagga smoking frequency was also analysed by the number of days participants smoked dagga on its own, whereby 24% of the participants were classified as heavy and regular dagga smokers since they smoked dagga for more than five days in the past month, whereas, 76% of the participants comprised of those who smoked dagga for less than five days in the past month (refer to Table 4.6 below). These were classified as occasional dagga smokers. Two participants did not indicate their responses for dagga usage in the past year.

Table 4.6 Dagga smoking patterns

<i>Dagga smoking</i>		
<i>Question</i>	<i>N</i>	<i>%</i>
Have you ever smoked dagga on its own?		
Yes	58	31%
No	130	69%
In the past year, did you smoke dagga on its own?		
Yes	37	20%
No	19	11%
During the past month, on how many days did you smoke dagga on its own?		
4 or less	16	76%
5 or more	5	24%

Most of the participants (36%) who smoked dagga were 20 years old, whereas the least dagga smokers were (27%) 22 year old participants with. The age of onset for dagga smoking was 9 years, whilst the mean age of onset was 16.7 years. An analysis by gender revealed that more males (42%) than females (28%) were dagga smokers. In terms of academic level, more dagga smokers (42%) were in their 3rd year of study at university. About 20% of dagga smokers were in their fourth and postgraduate levels of their studies. Nonetheless, the above findings were found not to be statistically significant ($p > 0.05$).

A significant relationship between dagga smoking and race was found ($P = .004$), refer to Table 4.7 below. More Indians (46%) followed by Whites (44%) are more dagga smokers than any other racial group. Coloureds (37%) and Blacks (24%) respectively, were the least dagga smokers. According to a comparison by adjusted residuals, Indians were 2.2 times more likely to smoke dagga than any other racial group, and blacks were 2.8 times less likely to smoke dagga.

Table 4.7 Relationship between dagga smoking and race

<i>Dagga smoking</i>			
Race	Tn	Yes	No
<i>Blacks</i>	126 (100%)	30 (24%)	96 (76%)
<i>Coloureds</i>	08 (100%)	03 (37%)	05 (62%)
<i>Indians</i>	35 (100%)	16 (46%)	19 (54%)
<i>Whites</i>	18 (100%)	08 (44%)	10 (56%)
Total	187 (100%)	57 (38%)	128 (29%)

* $P = .040$ for race, **Significant**. **Adjusted residuals:** Indians 2.2 & Blacks -2.8

(d) Sexual-risk behaviour

Table 4.8 below shows that more than half (51%) of the participants of the total sample have ever engaged in a sexual intercourse in their life time. Of those who indicated to have ever had a sexual intercourse, 83% were classified as low sexual-risk takers since they had sexual intercourse with one or two different partners in the past year, and 17% of the participants were classified as high sexual-risk takers since they had a sexual intercourse with at least three or more different partners in the past year. Eight participants did not indicate how many different partners they have had a sexual intercourse with in the past year.

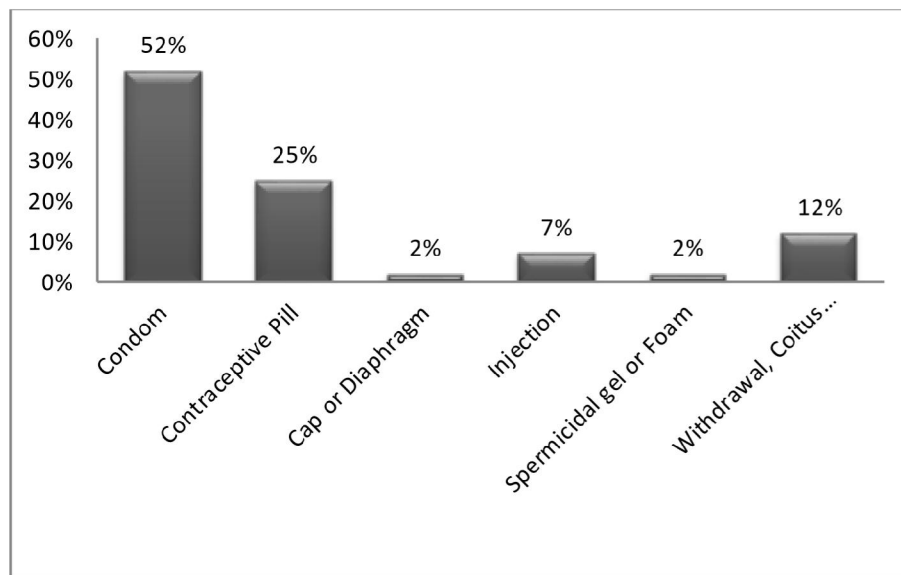
According to Table 4.8 below, the majority of the participants (90%) confirmed to have known their partners for more than seven days during the last occasion of their sexual intercourse. However, the remaining 10% of the participants denied knowing the person they last had a sexual intercourse with for more than seven days. These participants were classified as high sexual-risk takers.

When assessing for the frequency of sexual intercourse, 46% of the participants indicated to have had sexual intercourse in the past one or two week's period, and they were classified as sexually active (please refer to table 4.8). Table 4.8 also indicates that the majority (74%) of the participants have taken some precaution against sexually transmitted diseases and pregnancy. The most frequently used method of prevention was a condom, used by 52% of the participants, followed by contraceptive pills with 25% participants. The Bar chart below (Figure 7) indicates the usage or preferred choice of prevention against pregnancy or sexually transmitted disease by the participants.

Table 4.8 Sexual-risk behaviour patterns

<i>Sexual-risk behaviour</i>		
<i>Question</i>	<i>N</i>	<i>%</i>
Have you ever had sexual intercourse?		
Yes	95	51%
No	93	49%
With how many different partners have you had sexual intercourse, in the last 12 months		
2 partners or less	72	83%
3 or more partners	15	17%
How long ago did you last have a sexual intercourse?		
2 weeks or less	38	46%
3 or more weeks	44	54%
On the last occasion that you had sexual intercourse, had you known your partner for more than 7 seven days?		
Yes	85	90%
No	9	10%
On the last occasion that you had sexual intercourse, did you or your partner use anything to prevent pregnancy (family planning) or prevent disease?		
Yes	70	74%
No	25	26%

Figure 7 A Bar graph depicting the preferred method of prevention



The relationship between sexual-risk behaviour and various demographics was calculated amongst those who indicated to have ever engaged in a sexual intercourse. An analysis by race showed that 62% were Coloured participants, and the least were Whites with 39% participants. In terms of academic level, most (58%) of the participants who have ever engaged in a sexual intercourse were in their 3rd year level of study, whereas 4th year or postgraduate students were the least (20%) amongst those who have ever engaged in a sexual intercourse. Nonetheless, the above mentioned relations were not statistically significant ($P > 0.05$).

Table 4.9 below depicts a significant relationship between age and sexual risk-behaviour ($P = .003$). The majority of those who ever engaged in a sexual intercourse were (69%) 21 year old participants, whereas the least of those were (28%) 18 years old. The age of onset for those who have ever engaged in a sexual intercourse was 9 years, with the mean age of 16.9 years for the initiation of sexual intercourse. A comparison by adjusted residuals found that 18 year olds were 2.8 times less likely to engage in a sexual intercourse than any other age group, whereas 21 year olds have a 2.5 chance of engaging in a sexual intercourse than any other age group (refer to table 4.9 below).

Table 4.9. Relationship between sexual risk behaviour and age

<i>Sexual-risk behaviour</i>			
Age	Tn	Yes	No
18 years old	32 (100%)	09 (28%)	23 (72%)
19 years old	55 (100%)	23 (42%)	32 (58%)
20 years old	52 (100%)	32 (62%)	20 (38%)
21 years old	36 (100%)	25 (69%)	11 (31%)
22 years old	11(100%)	05 (45%)	06 (55%)
Total	186 (100%)	94 (51%)	92 (49%)

*P = .003 for age, **Significant**. **Adjusted residuals:** 18 years old = -2.8 & 21 years old = 2.5

Table 4.10 below depicts another significant correlation between gender and sexual-risk behaviour that was established ($p = .004$). An analysis within gender revealed that a higher proportion of male participants (70%) than female participants (45%) reported to have ever engaged in an intimate sexual intercourse. A comparison by adjusted residuals indicated that males were approximately 3 times more likely to engage in a sexual intercourse than females than expected, and vice versa.

Table 4.10 Relationship between sexual risk behaviour and gender

<i>Sexual-risk behaviour</i>			
Gender	Tn	Yes	No
Males	43 (100%)	30 (70%)	13 (30%)
Females	145 (100%)	65 (45%)	80 (55%)
Total	188 (100%)	95 (51%)	93 (49%)

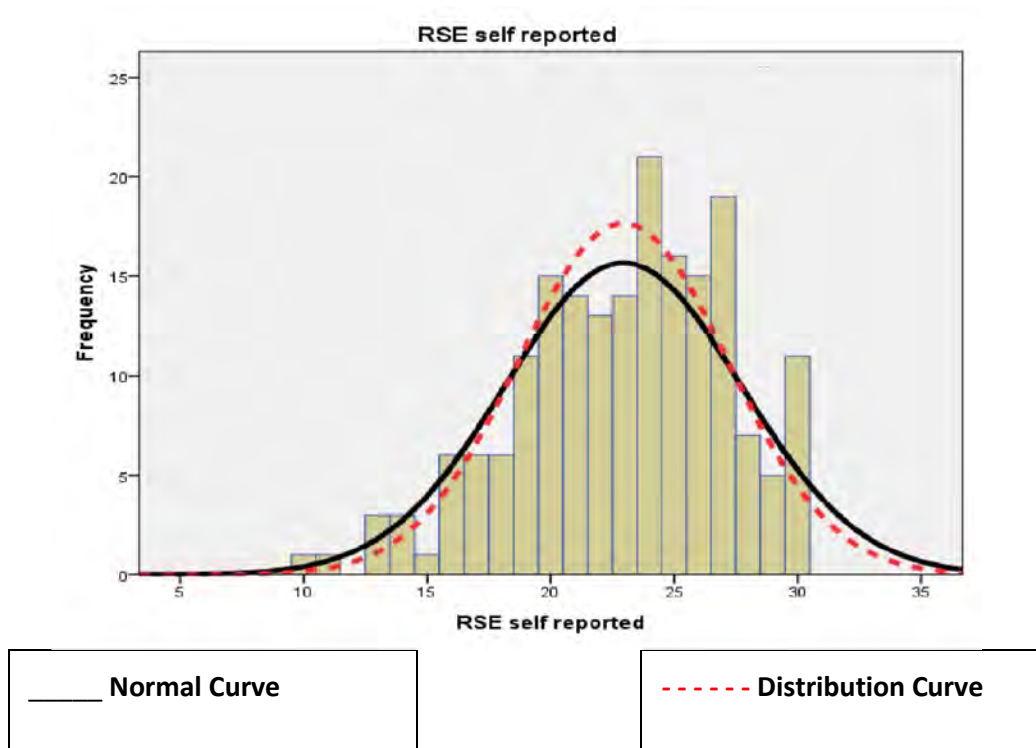
* P = .004for sex, **Significant**. **Adjusted residuals:** females = -2.9 & males = 2.9

4.2. Findings on Self-reported Self-esteem

4.2.1. Summary results of Self-esteem

This paragraph's focal point is on the results and distribution of scores for self-esteem as measured by the Rosenberg Self-esteem scale (RSS), which is a global self-report scale of self-esteem. The results of this study in this measure were as follows: self-esteem percentage scores ranged from a minimum of 23% to a maximum of 100% ($n=178$, $\mu=76\%$, $\sigma_x=15\%$). A slightly negative skewed distribution was observed (see Figure 8 below), which indicates that most participants indicated a higher than average self-esteem. This means that most participants reported that they uphold a high self-esteem. To be more specific, 95 % ($n=178$) participants of the total sample indicated high scores for self-esteem, whilst the other 5% ($n=10$) indicated low scores on self-esteem. In a nutshell, a higher proportion of high self-esteem than low self-esteem was found.

Figure 8. A histogram depicting self-esteem score distribution



**Note the negative skewed distribution of the curve on the graph.*

4.2.2. Relationship between Self-esteem and Demographics

The relationship between self-esteem and each demographic variable (that is, age, race, academic level, & gender) was analysed, and the outcome showed no significant correlations except for correlations between race and self-esteem. Otherwise, the P value was greater than the required statistical significant value ($p > 0.05$) for most of the demographic variables when compared to self-esteem. For that reason, no further findings pertaining to the association between self-esteem and demographics are further presented in this study. Nevertheless, the next paragraph will elaborate on the only significant relationship that was confirmed between race and self-esteem.

A significant correlation between race and self-esteem was found (or $P = .055$). However, further investigations using adjusted residuals and power analysis to determine the dynamics and nature of the relationship between the two variables (race & self-esteem) was impossible because all the necessary assumptions were not met. Three cells (37.5%) had an expected count of less than 5 (with a minimum expected count of 0.39) instead of an expected count of greater than 5. As a result, sampling error or chance could not be ruled out despite a significant relationship, indicating that the sample representation was not fairly distributed. For instance, White, Indian, and Coloured racial groups were minimally represented in the sample. That is why such a correlation between race and self-esteem will not be expatiated nor included under the discussion chapter.

4.3. Relationship between Self-esteem and Risk-taking Behaviour

A statistical analysis showed that data was not normally distributed, as evident through the score distribution for both variables in question (that is, self-esteem and risk-taking behaviour). The score distribution for self-esteem was negatively skewed, and the other score distribution for risk-taking behaviour was positively skewed. Therefore, defining correlations between self-esteem and risk-taking behaviour was not possible, especially using parametric correlations (or conventional methods of correlations). As a result, Non-parametric correlations were (or had to be) used in order to determine the correlation between both self-esteem and risk-taking behaviour.

The IBM SPSS Statistics 21 was used to run the non-parametric (that is, Chi-square) correlations between self-esteem and risk-taking behaviour, which was found to be not significant (Spearman's $\rho = 0.014$; $P = 0.852$). For a significant correlation, the P value should be equal to or less than 0.05 but not greater. Therefore, the null-hypothesis which states that there is no significant correlation between self-esteem and risk-taking behaviour for this study sample was accepted, whilst the alternative hypothesis was rejected. This indicates that risk-taking behaviour is independent of self-esteem, in such a way that self-esteem does not influence risk-taking behaviour.

To conclude this section, the above findings confirm Hypothesis 1 (also known as the null-hypothesis: H_0) of this study, because a non-significant correlation was found between self-esteem and risk-taking behaviour. This means that there is no relationship between self-esteem and risk-taking behaviour whatsoever, among adolescent students studying at the University of KwaZulu-Natal, Pietermaritzburg Campus. Risk-taking behaviour patterns and self-esteem patterns were also illustrated. The next chapter will elaborate on these findings and the implications thereof.

Chapter 5: Discussion and conclusions

This chapter presents the discussion of the results (in the previous chapter) as presented within the context of the original aims and hypotheses of this study. The discussion includes the interpretation of the findings captured in the previous chapter and implications thereof. As the discussion unfolds, the following sub-topics or headings will be expatiated in cognizance to the literature review: significant findings and or conclusions of the study, implications of the presented findings, limitations of the study, and suggestions for future research among others.

5.1. Significant findings

A number of significant findings were revealed in this study. Only the main findings pertaining to the aims of this study and those that were of statistical significance will be explained in this chapter. The main findings of this study will be explained first and the other significant or additional findings will follow.

5.1.1. Relationship between self-esteem and risk-taking behaviour

This study revealed that there is no significant relationship between self-esteem and risk-taking behaviour among adolescent students studying at the University of KwaZulu-Natal, Pietermaritzburg Campus. This indicates that any apparent relations between self-esteem and risk-taking behaviour were not significant because a correlation was not found between the two variables. As such, Hypothesis 1 (also known as the null-hypothesis: H_0) of this study was confirmed, leaving the alternative hypothesis as null and void. The accepted null-hypothesis confirmed the absence of a significant correlation between self-esteem and risk-taking behaviour, which means that risk-taking behaviour is independent of self-esteem. As such, interventions aiming towards boosting self-esteem will be less-effective in protecting adolescents against risk-taking behaviour or at least reducing their engagement in risk behaviours.

For the sake of comprehension, the next section will describe and thoroughly explain the lack of correlations between self-esteem and risk-taking behaviour as found in this study. This will be done by looking at differences between the variables and other factors that (or may) influence risk-taking behaviour among adolescents. Hence, the main focus of the next section is to help in understanding the current finding and what could be required in order to show a correlation between the two variables.

5.1.2. Differences found between variables

Adolescent risk-taking behaviour is a complex phenomenon with multiple determinants or etiological factors. According to Booyens et al. (2010), adolescent risk-taking behaviour is influenced (or determined) by age, family integration, socioeconomic status, school performance, neighbourhood or environment, peers and self-esteem amongst others. All these factors could possibly impact on the relations between the variables. Although self-esteem is acknowledged as part of the determinants of adolescent risk-taking behaviour, it does not indicate or mean that self-esteem can solely influence adolescent risk-taking behaviour.

Similar studies prove that low self-esteem alone is less likely to supply adequate etiological explanations for the variety of risk-taking behaviours adolescents engage in (Kavas, 2009; Wild et al., 2004). Therefore, consistent with the results of this study, it can be deduced that self-esteem on its own is less likely to cause adolescent risk-taking behaviour although it still remains a vital determinant of adolescent risk-taking behaviour when considered in the context (or as a combination) of other determinants such as peer pressure, and environment. Furthermore, self-esteem was measured in a continuum, categorized into low self-esteem and high self-esteem in this study. None of these self-esteem categories were either linked to risk-taking behaviour, indicating that neither low self-esteem nor high self-esteem separately were able to yield a significant relationship with risk-taking behaviour.

This is inconsistent with most studies of risk-taking behaviour (Baumeister et al., 2003; Coleman & Hendry, 1991; Kavas, 2009; Trzesniewski et al., 2006; Wild et al., 2004), which were able to link either a low or high self-esteem with risk-taking behaviour. On one hand, these studies were able to prove that a low self-esteem is linked to alcohol consumption, sexual-risk, crime conviction in adulthood, and various health endangering behaviours during adolescent stage. On the other hand, a high self-esteem was linked to good health, less risk-taking behaviour, discipline and a good sense of well-being.

Individuals with a low self-esteem are predisposed to adopting risk-taking behaviour than those with a high self-esteem as described by several researchers (Kavas, 2009; Wild et al., 2004). Other studies (for example: Kavas, 2009; Peltzer et al., 2001; Wild et al., 2004) have found a relationship between low self-esteem and risk-taking behaviour, which is not the case for the current study.

Peltzer et al. (2001) found a significant relationship between low self-esteem and alcohol use among university students at a Limpopo University. This indicates that self-esteem levels among university students should not be ignored although the current study did not find any significant correlations between self-esteem and risk-taking behaviour among university students in KwaZulu-Natal.

Children and adolescents with a low self-esteem, according to Trzesniewski et al. (2006), usually seek out different forms of anti-social behaviours as a way of enhancing their self-worth, self-confidence and self-esteem. The outcome of adolescents enhancing self-esteem and confidence at the expense of endangering themselves or others by engaging in risk-taking behaviour is justified and understood within theoretical frameworks. In particular, the Subjective Expected Utility (SEU) theory argues that people aim to maximize utility (that is, gratification or pleasure) in all decisions (Aliev et al., 2012; Mishra & Fiddick, 2012). Thus, individuals take into considerations the outcome for each option when faced with a situation that requires one to choose between two or more options (Umeh, 2009). For example, adolescents who engage in risk-taking behaviour would consider the immediate gratification of being accepted by peers irrespective of the high levels of risks embedded in the concerned risky behaviour, those with a low self-esteem are particularly more prone.

The emphasis placed on the value attached to the outcome (whether it is desired or despised) and its probability of materializing (is the outcome guaranteed or it can only happen by chance) remains essential for the subjective expected utility theory (Umeh, 2009). For instance, an individual might choose to engage in a health endangering behaviour because the negative consequences might either happen by chance or after a long period of time, like choosing to smoke dagga because it has a desired outcome which outweighs the probability of lung cancer or other related illnesses in the future.

The adolescent stage on its own also contains elements that culminate to engagement in risk-taking behaviour besides self-esteem, which is less likely to cause risk-taking behaviour as per literature findings in this current study. The developmental changes, body changes, challenges and demanding nature of the adolescent stage triggers a lot of expectations and immense pressure from family, peers, society and media which makes the negotiating adolescent prone to risk-taking behaviour (Kimmel & Weiner, 1995; Reber et al., 2009). When the adolescent stage is successfully negotiated, it leads to a responsible functioning and a healthy adult. However, if not negotiated successfully, it leads to a number of problems which negatively affect the negotiating adolescent's overall well-being (Reber et al., 2009). Thus, negotiating the adolescent stage is usually typified by massive stress and vulnerability which is taxing to the negotiating adolescent, hence their vulnerability to risk-taking behaviour is increased. That is why it is easier for most negotiating adolescents to frequently resort to risk-taking behaviour at this stage (Lloyd, 1985).

According to the Prospect theory, adolescents resort to risk-taking behaviour because of how they view or frame their options during adolescent stage. The prospect theory contends that the manner in which options are framed or presented to an individual (that is, gain or loss, high or low probability) determine or influence the type and nature of a decision that will be taken by the individual, irrespective of whether the choice is either rational or irrational (Mowrer & Davidson, 2011). Likewise, Essau (2004) found a significant correlation between adolescent's engagement in risk-taking behaviour and their risk perception. For instance, more adolescents tend to view their options as fun regardless of the consequences because they see themselves as having a good time when indulging in illicit substances and engaging in self-harm activities. More often, accepted options are those that are framed or conceived in a positive rather than a negative manner (Kahneman & Tversky, 1975; Umeh, 2009).

Some adolescents will not only resort to risk-taking behaviour, but they are more likely to go beyond that point and exhibit criminal tendencies in order to sustain their addiction or thrill towards risk-taking behaviour. According to the (SAPS) South African Police Service's report, about 43% of South Africa's youth are more likely to become criminal offenders sooner than later in life (Booyens et al., 2010; A. Maree, 2010).

Therefore, adolescent risk-taking behaviour can escalate to a more severe situation where adolescents resort to crime or delinquent behaviour, and may likely be diagnosed as having an antisocial personality disorder in adulthood. For example, if an adolescent is addicted to drugs, he or she is likely to begin stealing in order to finance his or her addiction problem and has a chance of dropping out of university.

Regarding probability; most adolescents succumb to seemingly unreasonably and pointless risk-taking behaviours at the expense of their future and careers because of the distortion on what is guaranteed and not. According to Umeh (2009), people have serious challenges dealing with extreme probabilities because the idea of chance is often despised. The inclination for certainty is mediated by either bad or good circumstances (Kahneman & Tyversky, 1975; Umeh, 2009). That is why people are generally more cautious (risk averse) in good situations but take more risk (risk seeking) in bad situations (Mishra & Fiddick, 2012; Mowrer & Davidson, 2011). In simple terms, people have a propensity to keep what they have (or what is guaranteed) than to take risks for something that is not guaranteed (Umeh, 2009). That is why adolescents are more likely to choose to experiment with smoking, drugs and alcohol because they are guaranteed (or get to keep) a sense of belonging amongst their peers and a satisfied curiosity. Conversely, the merits of not smoking illegal drugs because of notably reduced susceptibility to long-term health and being caught (or arrested) is usually ignored and seen as uncertain (that is, vague and not likely to occur), although its vital role in maintaining ones' good health in the long run remains unshaken.

This section is concluded by acknowledging that no relationship between self-esteem and risk-taking behaviour was found in this study, which is not consistent with most studies. This is accounted for by the fact that self-esteem alone is not sufficient as an etiological explanation for risk-taking behaviour. As such, other etiological factors for risk-taking behaviour like environment, peer pressure, and family settings need to be considered when investigating correlations. The nature and characteristics of the adolescent stage also plays a role in propelling adolescents to engage in risk-taking behaviour.

The extent of consequences and level of adolescent risk-taking behaviour has been found to be alarming and detrimental to negotiating adolescents. The subjective expected utility theory and the prospect theory have been found useful for the comprehension of adolescent's engagement in risk-taking behaviour, and explaining the absence of correlation evident between the two variables in this study. Otherwise, a correlation would have been able to link cause and effect for adolescent risk-taking behaviour and shed some light on how these two variables relate. Other significant findings follow in the next section of this chapter.

5.2. Other significant findings

This section will now focus on the discussion of other significant results found in this study. The patterns of risk-taking behaviour and self-esteem will be explained, as well as other trends that were worth noting. As such, the demographic profile of adolescents who engage in risk-taking behaviour and various levels of self-esteem will be highlighted as the discussion unfolds.

5.2.1. Levels of risk-taking behaviour engagement

This study revealed that the majority of the studied adolescents (81%) have at least engaged in one or more types of risk-taking behaviour in their life-time. This shows that a high number of adolescents were vulnerable and likely to engage in at least one form of risk-taking behaviour within adolescent stage.

This is consistent with many adolescent studies which showed that adolescent risk-taking is on the rise and considered to be a major problem for many adolescents (Galván, 2012; Leather, 2009; Madu & Matla, 2003; Michael & Ben-Zur, 2007; Timmermans et al., 2008; Umeh, 2009). Such alarming engagements or experimentation with risk-taking behaviours are predominately reported to be a common cause for adolescent morbidity and mortality than preventable diseases (Flisher et al., 1993a; Wild et al., 2004).

Less than half (36%) of the participants in this study were classified as engaging in high risk-taking behaviour after the risk-taking behaviours were grouped to reflect the level of risk involvement, although many reported ever engaging in at least one form of risk-taking behaviour.

The other 64% of the participants were classified as engaging in low risk-taking behaviour. It is evident that more participants reported lower than average risk-taking behaviour, which suggests that that only a few adolescents were really vulnerable to risk-taking and possibly their well-being is threatened.

The few adolescents who are classified as high risk-takers above could also be viewed as individuals suffering from a syndrome of risk behaviours. This syndrome is described as a wide propensity for individuals to engage in numerous risk behaviours (Protogerou et al., 2012). To qualify, adolescents who end up using illicit drugs had at least been involved in either or both cigarette smoking and alcohol consumption (Essau, 2004). However, the majority of the adolescents are still viewed as vulnerable and not safe irrespective of their lower than average risk-taking behaviour as noted from the previous paragraphs.

The argument put forth, is that adolescents who engage in one form of risk-taking behaviour are more likely to engage in another or other forms of risk-taking behaviours. This has also been noted (Gouws et al., 2010; Kalichman et al, 2006; Morojele et al, 2006; Wild et al, 2004). For instance, adolescents who consume alcohol were found to be more inclined to engage in sexual-risk behaviour, which also led to other risk-related behaviours that include psychological disorders (depression, stress, suicide), teenage parenthood and education failure or university (or school) drop-out (Timmermans et al., 2008). Also, is the co-occurrence of substance use and delinquent behaviour (Essau, 2004). Overall, one form of risk-taking behaviour is problematic enough because it usually opens doors for adolescents to engage in other forms of risk-taking behaviour.

Most risk-taking behaviour definitions emphasize on the destructive nature, and negative outcome or consequences for those who engage in any form of risk-taking behaviour because involvement in any form of risk-taking behaviour is problematic (Byrnes et al., 2004; Leather, 2009; Umeh, 2009). Therefore, despite having a few adolescents who severely engaged in risk-taking behaviour, those who reported lower than average risk-taking behaviour are still a concern. This could be because most of them are still negotiating the adolescent stage and yet remain vulnerable due to the high level of chance for risk initiation or shift to more severe forms of risk-taking behaviour within this stage, as evidenced in the previous section.

The most common form of risk-taking behaviour reported in the current study was alcohol (72%), followed by sexual-risk behaviour (51%), then cigarette smoking (38%), and dagga smoking (31%). Glue sniffing (10%) was the least reported type of risk-taking behaviour amongst the other mentioned or five common types of risk-taking behaviour focused on in this discussion. These are common among adolescents and are on the rise the world over (Flisher et al., 1993a; Timmermans et al., 2008). The pattern depicted here is consistent with other studies (Essau, 2004; Madu & Matla, 2003; Michael & Ben-Zur, 2007), because alcohol was also found to be the most frequent risk-taking behaviour or primary substance of abuse amongst students or adolescents, which is likely to be followed by either cigarette or dagga smoking.

Other risk-behaviours like cocaine, ecstasy, and other illegal drugs were excluded from the results of this study because they were least reported by participants and they also yielded a significantly low statistical value. However, less than three participants indicated ever having used one of these excluded substances. This exclusion indicates a less frequent usage of illegal drugs amongst students at the University of Kwa-Zulu Natal, which is a positive finding. Although some studies (Gouws et al., 2010; Morojele et al., 2006) show that adolescents' involvement in drugs has remarkably been on the rise in recent years, only a few cases of drug use was recorded in this study. This was found to be inconsistent with other findings of a similar study. For instance, a 2003 survey by Gouws et al. (2010) revealed that about 45% of high school learners experimented with drugs in Cape Town, and about 32% were addicted or "hooked", that is, they continued to use drugs. Such difference could be accounted for by geographical area because the above mentioned study was done in Cape Town whilst the current one in Pietermaritzburg.

Adolescent risk-taking behaviour by gender showed that more males (51%) than females (32%) engaged in risk-taking behaviours amongst the participants, indicating that males predominantly engage in self-harming and dangerous activities which leaves them more vulnerable to risk-taking behaviour than their female counterparts. The difference in this case, according to Essau (2004), is reflective of gender stereotypes which usually portray males as less empathic. Moreover, a study by Kavas (2009) confirms that both adolescent male and female students engage differently in risk-taking behaviour.

The study proved that more health-risk behaviours like cigarette smoking and illicit drug use were more common amongst males than females. In addition, aggression-related hormonal change during adolescent stage could also explain such gender differences for their engagement in risk-taking behaviour. According to Arnett (1996), high secretions of testosterone amongst males during adolescent stage predispose them to aggression tendencies that manifest in reckless or risk behaviours.

Adolescent risk-taking behaviour was also explained by age, whereby the minimum age of onset for engagement in risk-taking behaviour was six years old. The average age of onset for all combined risk-factors or risk-taking behaviour was 15.3 years old, indicating that adolescents would have initiated or experimented with at least one or more risk-taking behaviours by the time they reach approximately 15 years old.

The above mentioned results pertaining to age, suggest that the age of onset for adolescents usually happens within the middle stage of adolescence with an exception of some outliers that may initiate risk-taking behaviour as early as the age of six. This also means that age is a predictor of risk-taking behaviour, because it can be deduced from this study that risk-taking behaviour peaks when adolescents are around 15 years old. This is consistent with Essau (2004), who states that age is a crucial predictor for all risk behaviours with the exception of thrill-seeking. As such, rigorous policies, intervention, prevention and treatment strategies should be intense and primarily focused on the middle stage of adolescence as opposed to early- or late adolescents stages. This is necessary because most adolescents are more prone to risk-taking behaviour at this age or particular stage of adolescence. The unfolding discussions will independently look at the studied risk-factors and their patterns.

5.2.2. Risk-taking behaviour patterns

5.2.2.1. Alcohol consumption

Alcohol was indicated as the most widely used substance of abuse because a two-third majority of the participants admitted to have had at least more than one “sip” of alcohol in their life-time. However, most alcohol consumers in this study were either experimenters or occasional alcohol consumers as opposed to regular drinkers.

Alcohol consumption in the past year was indicated by the majority (52%) among those who ever reported consuming alcohol. A small number of participants (25%) comprised of heavy drinkers after a distinction between heavy drinkers and non-heavy drinkers was made by looking at those who had five or more drinks on more than five occasions in the past two weeks.

The above could be understood from many perspectives, for instance, Madu and Matla (2003) in their study argue that alcohol is attractive to adolescents and serves as a sign of maturity. Therefore, it is not surprising that the subjects (late adolescents) in this study have ever consumed alcohol than any other studied risk-factor because they are about to reach adulthood (or are within early adult-hood), and some already believe that they are adults. As such, their inference to alcohol consumption is because they feel they are old enough. This is exacerbated by the fact that alcohol consumption is legal from 18 years in South Africa (this simultaneously increases availability), and late adolescents (18 – 22 years old) can buy or enter into places where alcohol is served without questions (Parry, 2004; Protogerou et al., 2012). Furthermore, the reason that alcohol is easily available, widely used, and on the rise amongst adolescents in South Africa also contributes to the escalated consumption by subjects in this study (Kalichman et al., 2006; Morojele et al., 2012).

In conclusion, alcohol consumption levels are high amongst the students in the university, although there are few regulars and heavy drinkers. This is mediated by the fact that most students were classified as either experimenters or occasional alcohol consumers. However, it does not dispute that alcohol is a problem for students at the University because few irregular consumption of alcohol is still risky, especially when taken in excess once in a while.

5.2.2.2. Cigarette smoking

Less than half (38%) of the participants reported ever smoking a cigarette in their life time, indicating that it was not widely used by participants compared to alcohol. However, a higher proportion of regular cigarette smokers (52%) than experimenters or occasional smokers (42%) was found amongst those who ever reported smoking cigarette. This means that the majority of cigarette smokers were regular cigarette smokers, as opposed to a small number of experimenters or occasional smokers. This could be explained by the addictive nature of cigarette.

According to Gouws et al. (2010), tobacco or nicotine is highly addictive than most illicit drugs or substances. Therefore, those who experiment with cigarette smoking are likely to be hooked and become regular cigarette smokers, as evidenced in this study. Consistent with Tucker et al. (2008), cigarette smoking is a significant long-term health problem for most adolescents and it still continues to thrive. As such, cigarette smoking remains a problem for students at the university although averagely used in this study.

A correlation between cigarette smoking and race was found. Cigarette smoking was predominantly associated with Indians (63%), and least associated with Blacks (29%). The other White and Coloured racial groups shared the same spoils (50% each) of cigarette smoking usage. According to a comparison by adjusted residuals, Indians were approximately 3 times more likely to smoke cigarettes than any other racial group, and Blacks were 3.8 times less likely to smoke cigarettes. Panday et al. (2003) has also noted differences in cigarette smoking across racial groups in South Africa. They found a high prevalence of cigarette smoking amongst coloureds (46.7%) as opposed to a high prevalence of Indians found in this study. However, both studies were consistent in showing a low prevalence of cigarette smoking amongst Blacks, with a percentage of 29% for the current study and 19.3% for the study by Panday et al. (2003).

The above differences could also be attributed to environment (availability of cigarettes), socialisation, socioeconomic status, peer pressure and cultural values towards cigarette smoking (Leather, 2009; Panday et al., 2003; Tucker et al., 2008), which were not thoroughly explored in this study. Overall, Indians are prone to cigarette smoking than any other racial groups on one hand, and are the most cigarette smokers at the University of KwaZulu-Natal in the Pietermaritzburg Campus. Whereas, Blacks are the least amongst other racial groups to smoke cigarette on the other hand.

5.2.2.3. Dagga smoking

Dagga smoking was reported by 31% participants of the total sample who admitted to have ever smoked dagga on its own in their life time. Similar to cigarette smoking, a higher proportion of dagga smokers were classified as regular dagga smokers compared to a small number of those who were classified as either experimenters or occasional dagga smokers among those who ever reported dagga smoking.

Although many students reported regular dagga smoking, only a few were classified as heavy dagga smokers. That is, the majority were non-heavy dagga smokers.

The current study was consistent in showing that dagga smoking in relation to other illicit drugs (like cocaine or ecstasy) was high amongst adolescents compared to other illicit drugs. Similarly, a study on substance use found a higher percentage (7, 5%) of dagga smoking than (0.5%) injectable drugs (Flisher et al., 1993d). However, the current study was not consistent with other studies which showed that dagga smoking was commonly used amongst adolescents because less than half of the participants reported dagga smoking. For instance (continuing from the previous paragraph), Madu and Matla (2003) found that dagga was the most commonly used drug amongst adolescents, and it was the most preferred drug to smoke within a cluster of illicit drugs.

Various reasons or motives for smoking dagga are noted by most studies: weight loss (especially for females), low self-esteem, stress or depression, leisure boredom, and entertainment purposes (Madu & Matla, 2003; Peltzer et al., 2001; Wegner & Flisher, 2009). As such, these should be considered for intervention and prevention programs aimed against the fight of dagga smoking at the University of KwaZulu-Natal, Pietermaritzburg Campus. Overall, dagga smoking was not highly prevalent amongst the students although a significant small number of participants reported smoking dagga in the current study.

A significant relationship between dagga smoking and race was found. Dagga smoking was predominantly associated with Indians (46%), and least associated with Blacks (24%). According to a comparison by adjusted residuals, Indians were 2.2 times more likely to smoke dagga than any other racial group, and blacks were 2.8 times less likely to smoke dagga. In accordance to Essau (2004), it is not alarming that Indians are also predominantly associated with dagga smoking in this case because cigarette smoking is a precursor to other illicit drug use like dagga. In this study, cigarette smoking was high among Indians and low amongst blacks. The same explanation for such a correlation remains unchanged as argued for in the previous section for the correlation between race and cigarette smoking.

5.2.2.4. Sexual-risk behaviour

Sexual-risk behaviour is another risk factor of note that was reported by slightly many participants in this study and it was second to alcohol consumption amongst other risk-taking behaviours. Sexual-risk behaviour, according to Flisher et al. (1993e), is marked by early onset, multiple partners, and a low incidence of contraceptive usage the world over. Moreover, many studies still show that adolescents have multiple sex partners, do not use a condom, and usually have their first sexual encounter at an early age (Hendriksen et al., 2007; Makiwane & Mokomane, 2010). As such, the current study's findings are consistent with some studies, and it is evident that sexual-risk behaviour remains a problem for adolescents.

The majority of those who have ever engaged in a sexual intercourse were classified as low sexual-risk takers after being assessed by the number of partners and how long they have known them. There were only a few of those who were classified a high sexual-risk takers, with less than 20% in total. Furthermore, 46% of the participants were classified as sexually active when assessing for the frequency of sexual intercourse. This shows that nearly half of the students in this study are sexually active although many were found to be low sexual-risk takers. Therefore, sexual risk-behaviour was only predominant among few students.

The above mentioned is consistent with Wild et al. (2004), which revealed an increasing trend of sexual-risk behaviour among adolescents in South Africa. This specifically links with the high number of sexually active adolescents in this study. High sexual-risk behaviour found in this study was not consistent with other studies (for example, Makiwane & Mokomane 2010), since few students were classified as low sexual-risk takers. This is a positive finding because high sexual-risk behaviour is often associated with HIV infections, sexually transmitted infections, unplanned or teenage pregnancy, inconsistent condom use and multiple sex partners (Flisher et al., 1993; Gouws et al., 2010; Timmermans et al., 2008). Therefore, it can be concluded that most students in the current study are exempt or safe from these calamities or practices whilst indicating that they do condomize, and do not have multiple sex partners.

As evidenced from above, it is not alarming that the majority (74%) of the students have taken some precaution against sexually transmitted diseases and pregnancy during their last sexual encounter. Condom use was the most (52%) frequently used method of prevention followed by contraceptive pill with 25% participants. The least prevention method used was both cap or diaphragm and spermicidal gel or foam. The practice of applying these methods helps adolescents fight or prevent sexually transmitted infections and teenage or early pregnancy. Similarly, Hendriksen et al. (2007) reveals that most South African youth know and understand very well the importance of condom use and that it prevents HIV, sexually transmitted infections, and unwanted pregnancy. Their study also linked the availability and easy access of condoms in South Africa to be crucial for such a positive finding, the distribution of government “choice” condoms in particular. However, other studies (for example, Makiwane & Mokomane, 2010; Morojele et al, 2006) still show a high prevalence of inconsistent condom use which remains a major concern amongst adolescents, especially females who are unequally tasked to negotiate condom use with their partners.

A significant relationship between age and sexual risk behaviour was found. The majority of those who ever engaged in a sexual intercourse were (69%) 21 year old participants, whereas the least of these were (28%) 18 years old. A comparison by adjusted residuals found that 18 year olds were 2.8 times less likely to engage in a sexual intercourse than any other age group, whereas 21 year olds had a 2.5 chance of engaging in a sexual intercourse than any other age group. This means that the more adolescents develop throughout the stage, the more prone they become towards sexual-risk behaviour. This also confirms that the adolescent stage is difficult to negotiate and is a risky period that entraps most negotiating adolescent who usually resort to risk-taking behaviour like sexual-risk in this case, which has already been shown and explained through-out this study.

The minimum age of onset for those who have ever engaged in a sexual intercourse was nine years old, and the mean age for sexual intercourse initiation was 16.9 years. This is consistent with most studies (Flisher et al., 1993e; Hendriksen et al., 2007; Morojele et al., 2006) that have found early sexual debut to be a common characteristic of sexual-risk behaviour among adolescents.

These studies, together with this current study declare age to be a major risk factor for sexual-risk behaviour. Therefore, most adolescents usually encounter their first sexual intercourse within the middle stage of adolescent (at 16.9 years) and peaks during late adolescent stage (21 years), and only a few could experience it at an early or tender age of nine. This shows that sexual activity is common during the two latter stages of adolescence, which increases overtime and peaks within late adolescent stage.

Another significant correlation was established between gender and sexual-risk behaviour, whereby a higher proportion of male participants (70%) than females (45%) reported to have ever engaged in an intimate sexual intercourse. A comparison by adjusted residuals indicated that males were approximately 3 times more likely to engage in a sexual intercourse than females and vice versa. This shows gender stereotyping as how males may tend to be reckless as already explained. Nonetheless, there are quite a few attributes that are discussed below in order to understand this correlation.

Sexual-risk behaviour is characterized differently within each gender, while it remains common or prevalent in both sexes. For example, more females than males usually test for HIV, which is a good precaution for part of the AIDS treatment (Makiwane & Mokomane, 2010). This clearly shows that males seldom take necessary steps towards avoiding sexual-risk behaviour. This is consistent with the current study, sexual-risk behaviour was found to be more common among males than females although females are not exempt from carrying out sexual risk behaviour (Morojele et al., 2006).

The study also summed up these differences whereby females on the one hand, reported unsafe sex or sexual risk behaviour because of their desire to please their sexual partner and their inability to resist sexual advances from males out of fear of rejection or being beaten. Whereas, males cited the success of attaining a status (like streetwise, powerful, or boss), belief that condoms dampens the pleasure of sexual intercourse, and the perceived thrill of having multiple sex partners as impediments to their safe sex practices. It is clearly indicated in these views and decisions that both females and males applied the subjective utility theory and prospect theory in arriving at their decisions and such conclusions.

More females than males seem to have high sexual-risk behaviour at face value despite males having a greater influence than them on sexual risk-behaviour (Buthelezi et al., 2007). For instance, 90% of infected women within the age group of 15 - 24 years were revealed in the newly reported 57 1000 HIV infections in South Africa in the year 2005 (Gouws et al., 2010). Nonetheless, this notion of women being more prone and careless to safe sex practice was heavily debated and disputed by numerous studies (Kalichman et al., 2006; MacPhaila et al., 2009; Timmermans et al., 2008), including the findings of the current study. For instance, Flisher et al. (1993e) argued that sexual-risk behaviour is more common in males than females, and this is a trend consistent with international findings the world over. Therefore, it is deduced that male tendencies towards sexual-risk behaviour or unsafe sex practice is largely evident among females who usually fall prey because they do not have influence like males do, to negotiate better and safer sex practices. As such, females are more victimized than males due to high male sexual-risk behaviour.

The above mentioned trends could be further understood from various explanations. For example, males are more likely to commence sexual activity at an early age, to engage in sex with multiple-partners or novice partner, to have a greater number of sexual partners, to have sexual encounters more frequently, and are likely not to use condoms (Flisher et al., 1993e; Makiwane & Mokomane, 2010; Morojele et al., 2006). Overall, it is evident that more males than females are prone to sexual-risk behaviour. However, the high sexual-risk for males in this study is neutralized by the fact that most participants also reported measures towards safe sex practice, since they were found to take necessary precautions by using preventive methods like condoms and having partners that use contraceptive pills. As such, it suffices to say that males are prone to sexual-risk than their female counterparts although most are more careful to condomize, thus reducing or controlling their risk. This means that the supply of free issue condoms and contraceptive pills should continue to be efficiently distributed around the University and other key areas for students to utilize.

5.3. Self-esteem patterns

The majority of the participants reported a self-esteem score that was higher than average. That is, a higher proportion (95%) of high self-esteem than (5%) low self-esteem was found. Such high scores of self-esteem show that the students are confident of themselves with regards to their global self-esteem. However, these high scores are questionable since they were predominantly reliant on the individual's self-report. The limitations and implication of these scores are thoroughly explained in the next sections pertaining to limitations.

5.4. Limitations and Implications

This section will highlight limitations to this study, with reference to methodological limitations in particular. The presence of limitations does not indicate that this study was fallible or infallible (Hofstee, 2010), but it is to indicate the dynamics of this research and how else it could have been better approached as well as identifying what could be improved for further research. Thus, the implications of these methodological limitations will also be discussed. Nonetheless, some methodological limitations and implications thereof, will be briefly discussed since some of these methodological limits and points have been already discussed in chapter three (Methodology chapter).

These limitations and the implications should be considered when interpreting findings in this study in order to gain a better understanding and perceptions portrayed. Direct and parallel comparison of the findings in this study with other similar studies conducted in other areas or universities should be mindful of environmental, sampling, and methodological variations amongst these studies. Overall, future research and studies on a similar topic to this study should note these limitations as guidelines and fundamental basis to their study.

5.4.1. Research design limitations

The correlation nature of the current study potentially excluded other or third variables and was not able to fully explain the cause and effect for risk-taking behaviour. As such, multiple regression analysis and other possible variables that link to risk-taking behaviour other than self-esteem alone could have been considered. Nonetheless, correlation studies are useful, especially in laying foundations for future research and giving elementary nature of relationships between variables.

The use of a quantitative research method proved to be limiting to a certain extent. As such, these results cannot be generalized to other populations, places or universities elsewhere in the country except for the investigated group or places in this study. In addition, this method pose limitations to the comprehension of the patterns found and why adolescents engage in risk-taking behaviour due to its focus on numerical data. As such, a qualitative approach could have been added to make it a mixed-method approach, which is usually comprehensive and more accurate, especially when the two methods (that is, quantitative & qualitative) are combined.

5.4.2. Sample and sampling limitations

The data for the current study was solely based on adolescent self-report. This method is subject to intentional distortion (Madu & Matla, 2003), and it is impossible to assess the level of bias within the data (Essau, 2004). Therefore the data needs to be interpreted with caution, as there is always the possibility that the answers were flawed by the impact of social desirability (Kloep et. al, 2009). Nonetheless, there is substantial evidence indicating that self-report measures of adolescents risk-taking behaviour are indeed reliable and valid (Essau, 2004). This was consistent with the findings of the current study test item of the hypothetical drug “derbisol” (a test item to check the honesty of responses). The results were declared to be reliable, honest and valid because no participant reported ever using such a hypothetical drug. Overall, it means that the participants in this study did not fabricate responses when completing the questionnaires.

The current study only focused on late adolescent university students within the age range of 18 – 22 years old. As such the findings cannot be generalized to non-university adolescents and other stages of adolescents. Furthermore, the inclusion of one university and one city also prohibits generalization.

Socialization variables are essential in understanding factors that influence risk-taking behaviour (Essau, 2004). Socialization variables such as parenting styles, peers, community, media and the legal system were not investigated in this study. As such, it will be difficult to demonstrate how these variables influence adolescent risk-taking behaviour in other South African universities and communities.

The representation by language, race, sex, and academic level were not fairly distributed in this study. As such, analysis by language was ruled out, and risk-engagement by each language group was not done. This could have possibly linked to cultural factors. Nonetheless, the other demographic variables were included in the analysis or results of this study irrespective of their unequal representation. The analysis was mindful of such limits and it was carried in such a way that percentages and analysis methods controlled for such limits in order to present fair results.

5.4.3. Instruments or measures' limitations

5.4.3.1. Self-esteem scale

The operational definition of self-esteem and all its contributing factors are significant for any findings of a study because specific domains of self-esteem (that is, family- or academic-self-esteem) could yield different results than a global measure of self-esteem (Peltzer et al., 2001). According to Wild et al. (2004), interventions that targeted specific domains of self-esteem were more successful than those that focused on enhancing global self-esteem. In this current study, a global or one-dimensional measure (RSS) of self-esteem was used as opposed to a specific domain measure of self-esteem because of its strong reliability, validity, wide use, ten-items that requires less time to complete, universal nature and being a model for many studies for other self-esteem scale (Baumeister et al., 2003; Kavas, 2009; Peltzer et al., 2001). This scale made data collection easier because participants were encouraged to fill in such a short-questionnaire.

For more holistic and better findings, the RSS or one-dimensional measure of self-esteem should have been replaced by a more specific, multidimensional measure of self-esteem (Wild et al., 2004). Other appropriate (that is, domain specific or multidimensional) measures of self-esteem that could have been used include the *Self-esteem questionnaire* (SEQ) which consists of 42 items rated on a 4-point scale ranging from strongly agree to strongly disagree.

It also measures five specific domain of self-esteem (that is, peers, school, family, body image, and sports or athletic). Nonetheless, this would have caused serious implications for data collection in the current study because it has many items that requires a lot time when completing the questionnaire, and most participants may have been uninterested to fill in such a long questionnaire.

To date, studies that investigate relations between self-esteem and risk-taking behaviours are predominantly based on Euro-American populations, especially adolescents (Kavas, 2009; Wild et al., 2004). As such, it is suggested that other cultures, developing countries, and cross national studies should spear-head studies on self-esteem and risk-taking behaviour (Wild et al., 2004). Moreover, other factors, except for self-esteem alone should have been incorporated in the current study, since self-esteem cannot be independently liable for etiological and relationship (with risk-taking behaviour) explanations for various types of risk-taking behaviours adolescents engage in (Kavas, 2009). As such, family integration and socioeconomic status, academic performance, neighbourhood or environment, peers, language and cultural aspects should have been included - since they form parts of etiological factors for adolescent risk-taking behaviour (Booyens et al., 2010). Nonetheless, this exclusion of other factors was done because the current study was limited in terms of time that was within the confines of partially meeting the requirements for the fulfilment of a Masters degree in clinical psychology.

5.4.3.2. Risk-taking behaviour

The current study's adapted risk-taking behaviour scale did not cover many aspects of risk-taking taking behaviour because it is a broad topic. Other types of risk-taking behaviour like wreckless behaviour, violent behaviour, suicide, and delinquent behaviour were omitted. These excluded types of risk-taking behaviour could have correlated or shed more light on the relationship with self-esteem. As such, this exclusion is likely to compromise on the holistic picture of adolescent risk engagement, thus interpretations should be cautiously approached.

Other risk-taking behaviour scales which are thorough and detailed could have been utilized in order to improve and provide more comprehensive results of adolescent risk-taking behaviour. The original scale should have not been adapted at first, but it was adapted so that the current study does not become a replica of another study.

A more comprehensive risk-taking behaviour scale that could have been used in this study is the *Adolescent Risk-taking Questionnaire (ARQ)* which was used in adolescent risk study by Essau (2004). This scale is divided into four major risk factors that include thrill-seeking risks, rebellious risks, wreckless risks, and antisocial risks.

The first section of the scale measures adolescents' judgment of riskiness for 22 behaviours, whilst the other section measured adolescents' frequency of risk-taking behaviour engagement. These were respectively measured on a five-point Likert scale ranging from 0 = not at all risky to 4 = extremely risky, and 0 = never done to 4 = done very often. However, such a long scale could have posed challenges with data collection because most participants may have not been interested to complete such a scale. Another scale for consideration could have been the 83 Item *WHO Model Core Questionnaire on substance use* which was used in a local study and university by Peltzer et al. (2001) in Limpopo.

5.5. Recommendations

The findings of the present study provide significant information and understanding of the nature of the relationship between self-esteem and risk-taking behaviour among university adolescent students. As such, this is more likely to be useful for universities' counselling personnel to develop appropriate preventative strategies, and interventions for addressing adolescents' low self-esteem and risk-taking behaviour. In addition, student counselling centre's models of intervention can be refined and fine-tuned to better help adolescents engaging in high risk-taking behaviours and those prone to risk-taking behaviour.

Due to the co-occurrence of risk-taking behaviours, help providers or professionals should assess and screen for other potential or forms risk-taking behaviour when treating or intervening to adolescents engage in one form of risk-taking behaviour. The same caution should also be mindful of gender stereotypes or differences, and racial groups which were found to approach risk-taking behaviour differently.

The intervention approaches or treatment strategies should specifically target alcohol consumption and sexual-risk, especially during the middle- and late stages of adolescents. These have been proved to be prevalent and most influential factors that require immediate attention in this study. Lastly, it is recommended that future studies should tap into the exploration of differential relationships between adolescent risk-taking behaviour and various specific domains of self-esteem or rigorous multidimensional self-esteem scales (Trzesniewski et al., 2006; Wild et al., 2004). This will help produce information that could not have been otherwise produced by self-esteem global measures alone. In addition, further studies should explore links between adolescent risk-taking behaviour and various specific domains of self-esteem amongst other cultures, universities, geographical areas, and developing countries.

5.6. Conclusion

This current study investigated the relationship between self-esteem and risk-taking behaviour amongst adolescent students studying at the University of KwaZulu-Natal, Pietermaritzburg Campus. The investigation was a cross-sectional study as well as a correlation based study. This investigation was carried out by employing the quantitative research method because of its correlation nature. A self-administered questionnaire that comprised of items from two separate questionnaires was used to collect data. The questionnaire included: (1) the Rosenberg Self-esteem Scale (RSS); and (2) a Risk-Taking Behaviour Assessment Scale extracted from the work done by Flisher et al. (1993a). Demographic details were also added in order to determine a profile of adolescent risk-takers at the university by age, academic level, gender and race.

A total sample of 188 students was studied from various ethnic groups, gender and within the age range between 18 – 22 years old at the University of KwaZulu-Natal, Pietermaritzburg Campus. Alcohol consumption, cigarette smoking, illicit drug use, and sexual-risk behaviour were the common studied adolescent risk-factors. The other risk-behaviours like cocaine, ecstasy, and other illicit drugs were excluded from this study because they were least reported by participants and they also yielded a significantly low statistical value. Nonetheless, the less use of illicit drugs was regarded a positive and protective factor for the participants because it promotes general health and well-being.

This study was among the few studies (Baumeister et al., 2003; Flisher et al., 1993; Trzesniewski et al., 2006; Wild et al., 2004) that examined the relationship between self-esteem and risk-taking behaviour both locally and internationally, whereas many of these studies only focused their investigations on the nature of adolescent risk-taking behaviour or health endangering behaviours. Again, most of these studies specifically focused on early adolescents which left a knowledge gap for late adolescents. As such, this study focused on late adolescents with the aim of making significant contributions towards literature and by closing such gaps of knowledge.

The present study also extended findings on available literature on adolescents, self-esteem and risk-taking behaviour by investigating the relationship thereof at a University level in Pietermaritzburg. Whereas, many studies of this nature were conducted in larger cities like Cape Town, Durban and Johannesburg. Moreover, the demographic profile was mostly unique to the current study in that other studies never focused on factors such as academic level and the implications thereof. Overall, the sample of this study was different and a unique prototype when compared to other similar studies, including its geographical settings.

The findings revealed that self-esteem and risk-taking behaviour had no significant relationship. As such, Hypothesis 1 (also known as the null-hypothesis: H_0) of this study was adopted, leaving the alternative hypothesis as null and void. This indicates that any apparent relations between self-esteem and risk-taking behaviour were not significant because a correlation was not found between the two variables. The lack of a significant relationship could be attributed to the fact that adolescent risk-taking behaviour is a complex phenomenon which is determined by many other variables other than self-esteem alone. Furthermore, this finding was also explained using the subjective utility theory and prospect theory.

Patterns of risk-taking behaviour and how they relate with the demographics were also revealed in this study. For example, Alcohol and sexual risk-behaviour were found to be the most common forms of risk engaged by the students in this study. Cigarette and dagga smoking were regularly used by many students even though they had a low prevalence compared to alcohol and sexual-risk. It was also revealed that risk-taking behaviour was more common among males than females.

Other demographics, such as age and race were found to have significant relationship with some forms of risk-taking behaviour. However, no significant relations were found between academic level and all studied forms of risk-taking behaviour.

These patterns show a clear profile of risk engagement amongst late adolescent students.

Overall, these findings are more likely to be useful for university counselling personnel to develop appropriate preventative strategies, and interventions for addressing adolescent problems related to self-esteem and risk-taking behaviour in general. Furthermore, student counselling centre's models of intervention can be refined and fine-tuned to better equip and help adolescents already engaging in high risk-taking behaviours and those prone to risk-taking behaviour.

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Appendix A

Instructions and Informed consent.

GENERAL INSTRUCTIONS

Please fill in this questionnaire.

This is not a test, therefore there are definitely no right or wrong answers. Your name should NOT be written anywhere in this questionnaire in order to maintain confidentiality, so that no one should know who filled in this questionnaire. Please be honest when filling in this questionnaire. I hope you enjoy and learn something whilst filling it in.

Please tick where necessary/relevant and specify where requested. That is, in questions where there are boxes/circles, just tick inside the box/circle.

PARTICIPANTS' CONSENT FORM

Firstly, I would like to thank you in advance for participating in this research project. This consent form is for the following research topic: ***An investigation of the relationship between self-esteem and risk-taking behaviour among adolescent students studying at the University of Kwa-Zulu Natal, Pietermaritzburg campus.***

Choosing to participate in this study indicates that you are willing to complete all sections of the questionnaire. It means that you are participating out of your own free will. It is also important to note that you have the right to withdraw from participating in this study at any time you want to and there will be no consequences for withdrawing your participation.

The questionnaire will require approximately ten minutes, or less, of your time.

All information that you write down will be used for this research purposes only and will remain confidential. Only the researcher and his supervisor will have access to questionnaires for this researcher study.

Your signature below means that you have read and understood the information above; the purpose of the study has been clearly explained; and you consent to being part of this study.

Student/participant's signature

Date

SECTION A

This part of the questionnaire seeks to know your demographic characteristics but not your identity (i.e. does not require your name).

1. Age _____

2. Gender/Sex ☐ Female ☐ Male

3. Ethnicity/Race

BLACK	COLOURED	INDIAN	WHITE
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4. Home Language (Specify) _____

5. Home Town (Specify) _____

6. Level of study (First year)

1st year ☐ 2nd year ☐ 3rd ☐ Postgraduate ☐

This part of the questionnaire is concerned with the use of tobacco, alcohol, and other drugs.

7. Have you ever smoked a whole cigarette? ☐ Yes ☐ No

IF YES:

a. How old were you when you smoked a whole cigarette for the first time? Yrs _____

b. In the past year have you smoked a whole cigarette? ☐ Yes ☐ No

c. During the past month, on how many days did you smoke cigarettes?
_____ Days?

d. During the past month, on the days you smoked, how many cigarettes did you smoke per day? _____Cigarettes

8. Have you ever used alcohol (including beer and wine), other than few sips? Yes ☐ No ☐

IF YES:

a. How old were you when you used alcohol for the first time, other than a few sips? ____Years

b. In the past year, did you use alcohol other than few sips? Yes ☐ No ☐

c. During the past month, on how many days did you have at least one drink of alcohol?
_____Days

d. During the past 14 days, on how many days did you have 5 or more drinks on one occasion?
_____ Days

9. Have you ever smoked dagga on its own? No ☐ Yes ☐

IF YES:

a. How old were you when you smoked dagga on its own for the first time? _____
Yrs

b. In the past year, did you smoke dagga on its own? No ☐ Yes ☐

c. During the past month, on how many days did you dagga on its own? ____ Days

10. Have you ever smoked dagga and Mandrax together (“white pipes”, “buttons”)?
No ☐ Yes ☐

IF YES:

a. How old were you when you smoked dagga and Mandrax together for the first time?
Yrs _____

b. In the past year, did you smoke dagga and Mandrax together? Yes ☐ No ☐

c. During the past month, on how many days did you smoke dagga and Mandrax together?
_____Days

11. Have you ever sniffed glue, petrol or thinners? Yes ☐ No ☐

IF YES:

a. How old were you when you sniffed glue, petrol or thinners for the first time?

Yrs

b. In the past year, did you sniff glue, petrol or thinners? No ☐ Yes ☐

c. During the past month, on how many days did you sniff glue, petrol or thinners?
_____Days

12. Have you ever used crack cocaine?

☐ Yes ☐ No

IF YES:

a. How old were you when you used crack cocaine for the first time? _____Yrs

b. In the past year, did you ever use crack cocaine? Yes ☐ No ☐

c. During the past month, on how many days did you use crack cocaine? _____Days

13. Have you ever used derbisol?

☐ Yes ☐ No

IFYES:

a. How old were you when you used derbisol for the first time? _____Yrs

b. In the past year, did you ever use derbisol? Yes ☐ No ☐

c. During the past month, on how many days did you use derbisol? _____Days

14. Have you ever used Ecstasy?

☐ Yes ☐ No

IF YES:

a. How old were you when you used Ecstasy for the first time? _____Yrs

b. In the past year, did you ever use Ecstasy? Yes ☐ No ☐

c. During the past month, on how many days did you use Ecstasy? _____Days

15. Have you ever any other type of illegal drug, such as cocaine, heroine, stimulants, hallucinogenics such as LSD, Nexus, and MDMA? Yes ☐ No ☐

16. Have you ever injected any illegal drug (That is, That is, mainlining)? Yes ☐ No ☐

17. During a typical week, how much do you spend on each of the following?

Cigarettes R _____

Alcohol R _____

Dagga R _____

Mandrax R _____

This part is of the questionnaire is concerned with sexual risk behaviour

18. Have you ever had sexual intercourse? [This means intimate contact with someone of the opposite sex during which the penis enters the vagina] Yes ☐ No ☐

IF YES:

a. How old were you when you first had sexual intercourse? _____ Yrs

b. With how many different partners have you had sexual intercourse in the last 12 months? _____ Partners

c. How long ago did you last have sexual intercourse? _____ Weeks

d. On the last occasion that you had sexual intercourse, had you known your partner for more than 7 days? Yes ☐ No ☐

e. On the last occasion that you had sexual intercourse, did you or your partner use anything to prevent pregnancy (family planning) or prevent disease? Yes ☐ No ☐

- f. On the last occasion that you had sexual intercourse, if you did do anything to prevent pregnancy (Family planning) or disease, what did you or your partner use? (indicate more than one if necessary)

Condom (“rubber”)	
Injection	
Contraceptive pill (“the pill”)	
Cap or diaphragm	
Spermicidal gel or foam	
IUCD, IUD, “copper T”, Loop	
Withdrawal, coitus interrupts	

SECTION B

STATEMENT		Strongly Agree	Agree	Disagree	Strongly Disagree
1.	I feel that I am a person of worth, at least on an equal plane with others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.	I feel that I have a number of good qualities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.	All in all, I am inclined to feel that I am a failure.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4.	I am able to do things as well as most other people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.	I feel I do not have much to be proud of.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.	I take a positive attitude toward myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7.	On the whole, I am satisfied with myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8.	I wish I could have more respect for myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9.	I certainly feel useless at times.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10.	At times I think I am no good at all.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Thanks for your honesty and taking time to participate in this research!!!

Appendix B

Ethical Clearance Letter/Indemnity Letter

Appendix C

<i>Alcohol consumption & Age</i>			
Age	Tn	Yes	No
18 years old	32 (100%)	20 (62%)	12 (38%)
19 years old	55 (100%)	37 (67%)	18 (33%)
20 years old	52 (100%)	43 (83%)	09 (17%)
21 years old	36 (100%)	25 (69%)	11 (31%)
22 years old	11(100%)	08 (73%)	03 (27%)
Total	186 (100%)	145 (71%)	43 (29%)

*Two participants did not indicate their age.

*P = .350 for age **not significant**

<i>Alcohol consumption & Gender</i>			
Gender	Tn	Yes	No
Males	43 (100%)	35 (81%)	8 (19%)
Females	145 (100%)	100 (69%)	45 (31%)
Total	188 (100%)	135 (71%)	53 (29%)

* P = .112 for sex **not significant**

<i>Alcohol consumption & Race</i>			
Race	Tn	Yes	No
Blacks	126 (100%)	87 (69%)	39 (31%)
Coloureds	08 (100%)	07 (87%)	01 (12%)
Indians	35 (100%)	28 (80%)	07 (20%)
Whites	18 (100%)	12 (67%)	06 (33%)
Total	187 (100%)	134 (71%)	53 (29%)

*One participant did not indicate his/her racial group.

*P = .418 for race **not significant**

<i>Alcohol consumption & Academic level</i>			
Race	Tn	Yes	No
1st year	61 (100%)	40 (66%)	21 (34%)
2nd year	96 (100%)	76 (79%)	20 (21%)
3rd year	26 (100%)	17 (65%)	09 (35%)
4th year/postgrad	05 (100%)	02 (40%)	03 (60%)
Total	188 (100%)	135 (71%)	43 (29%)

*P = .080 for academic level **not significant**

<i>Cigarette smoking & Age</i>			
Age	Tn	Yes	No
18 years old	32 (100%)	12 (37%)	20 (63%)
19 years old	55 (100%)	17 (31%)	38 (69%)
20 years old	52 (100%)	19 (36%)	33 (64%)
21 years old	36 (100%)	18 (50%)	18(50%)
22 years old	11(100%)	05 (45%)	06 (55%)
Total	186 (100%)	71 (38%)	115 (62%)

*Two participants did not indicate their age.

*P = .452 for age **not significant**

<i>Cigarette smoking & Gender</i>			
Gender	Tn	Yes	No
Males	43 (100%)	20 (46%)	23 (54%)
Females	145 (100%)	51 (35%)	94 (65%)
Total	188 (100%)	71 (38%)	117 (62%)

*P = .178 for sex **not significant**

<i>Cigarette smoking & Race</i>			
Race	Tn	Yes	No
Blacks	126 (100%)	36 (29%)	90 (71%)
Coloureds	08 (100%)	04 (50%)	04(50%)
Indians	35 (100%)	22 (63%)	13 (37%)
Whites	18 (100%)	09(50%)	09 (50%)
Total	187 (100%)	71 (38%)	116 (29%)

*One participant did not indicate his/her racial group.

P = .001 for race **significant**.

***Adjusted residuals: blacks -3.8 & Indians 3.4**

<i>Cigarette smoking & Academic level</i>			
Race	Tn	Yes	No
1st year	61 (100%)	17 (28%)	44 (72%)
2nd year	96 (100%)	40(42%)	56 (58%)
3rd year	26 (100%)	13 (50%)	13 (50%)
4th year/postgrad	05 (100%)	01 (20%)	04 (80%)
Total	188 (100%)	71 (38%)	117 (62%)

*P = .139 for academic level **not significant**.

<i>Dagga smoking & Age</i>			
Age	Tn	Yes	No
18 years old	32 (100%)	09 (28%)	23 (72%)
19 years old	55 (100%)	16 (29%)	39 (71%)
20 years old	52 (100%)	19 (36%)	33 (64%)
21 years old	36 (100%)	11 (31%)	25 (69%)
22 years old	11(100%)	03 (27%)	08 (73%)
Total	186 (100%)	58 (31%)	126 (69%)

*Two participants did not indicate their age.

* P = .905 for age **not significant**.

<i>Dagga smoking & Gender</i>			
Gender	Tn	Yes	No
Males	43 (100%)	18 (42%)	25 (58%)
Females	145 (100%)	40 (28%)	105 (72%)
Total	188 (100%)	58 (31%)	128 (69%)

* P = .075 for sex **not significant**.

<i>Dagga smoking & Race</i>			
Race	Tn	Yes	No
Blacks	126 (100%)	30 (24%)	96 (76%)
Coloureds	08 (100%)	03 (37%)	05 (62%)
Indians	35 (100%)	16 (46%)	19 (54%)
Whites	18 (100%)	08 (44%)	10 (56%)
Total	187 (100%)	57 (38%)	128 (29%)

*One participant did not indicate his/her racial group. P = .040 for race, **Significant**.

* **Adjusted residuals: Indians 2.2 & Blacks -2.8**

<i>Dagga smoking & Academic level</i>			
Race	Tn	Yes	No
1st year	61 (100%)	16 (26%)	45 (74%)
2nd year	96 (100%)	30 (31%)	66 (69%)
3rd year	26 (100%)	11 (42%)	15 (58%)
4th year/postgrad	05 (100%)	01 (20%)	04 (80%)
Total	188 (100%)	58 (38%)	128 (62%)

* P = .476 for academic level **not significant**.

<i>Sexual-risk behaviour & Gender</i>			
Gender	Tn	Yes	No
<i>Males</i>	43 (100%)	30 (70%)	13 (30%)
Females	145 (100%)	65 (45%)	80 (55%)
Total	188 (100%)	95 (51%)	93 (49%)

* P = .004 for sex, **Significant**. Assumptions met, cell count > 5 @ 21.27.

* **Adjusted residuals: females = -2.9 & males = 2.9**

<i>Sexual-risk behaviour & Age</i>			
Age	Tn	Yes	No
18 years old	32 (100%)	09 (28%)	23 (72%)
19 years old	55 (100%)	23 (42%)	32 (58%)
20 years old	52 (100%)	32 (62%)	20 (38%)
21 years old	36 (100%)	25 (69%)	11 (31%)
22 years old	11(100%)	05 (45%)	06 (55%)
Total	186 (100%)	94 (51%)	92 (49%)

*Two participants did not indicate their age. P = .003 for age, **Significant**.

* Assumptions met, cell count > 5 @ 5.44. Adjusted residuals: 18 years old = -2.8 & 21 years old = 2.5

<i>Sexual-risk behaviour & Race</i>			
Race	Tn	Yes	No
Blacks	126 (100%)	69 (55%)	57 (45%)
Coloureds	08 (100%)	05 (62%)	03 (38%)
Indians	35 (100%)	14 (40%)	21 (60%)
Whites	18 (100%)	07 (39%)	11 (61%)
Total	187 (100%)	95 (51%)	92 (49%)

*One participant did not indicate his/her racial group. P = .274 for race, **not significant**.

<i>Sexual-risk behaviour & Academic level</i>			
Race	Tn	Yes	No
1st year	61 (100%)	26 (43%)	35 (57%)
2nd year	96 (100%)	53 (55%)	43 (45%)
3rd year	26 (100%)	15 (58%)	11 (42%)
4th year/postgrad	05 (100%)	01 (20%)	04 (80%)
Total	188 (100%)	95 (51%)	93 (49%)

* P = .190 for academic level, **not significant**.